CHNOLOGY DEPT.

Gas Journal

VOL. 276. 105TH YEAR. LONDON, NOVEMBER 25, 1953. NO. 4721. PRICE 1/3

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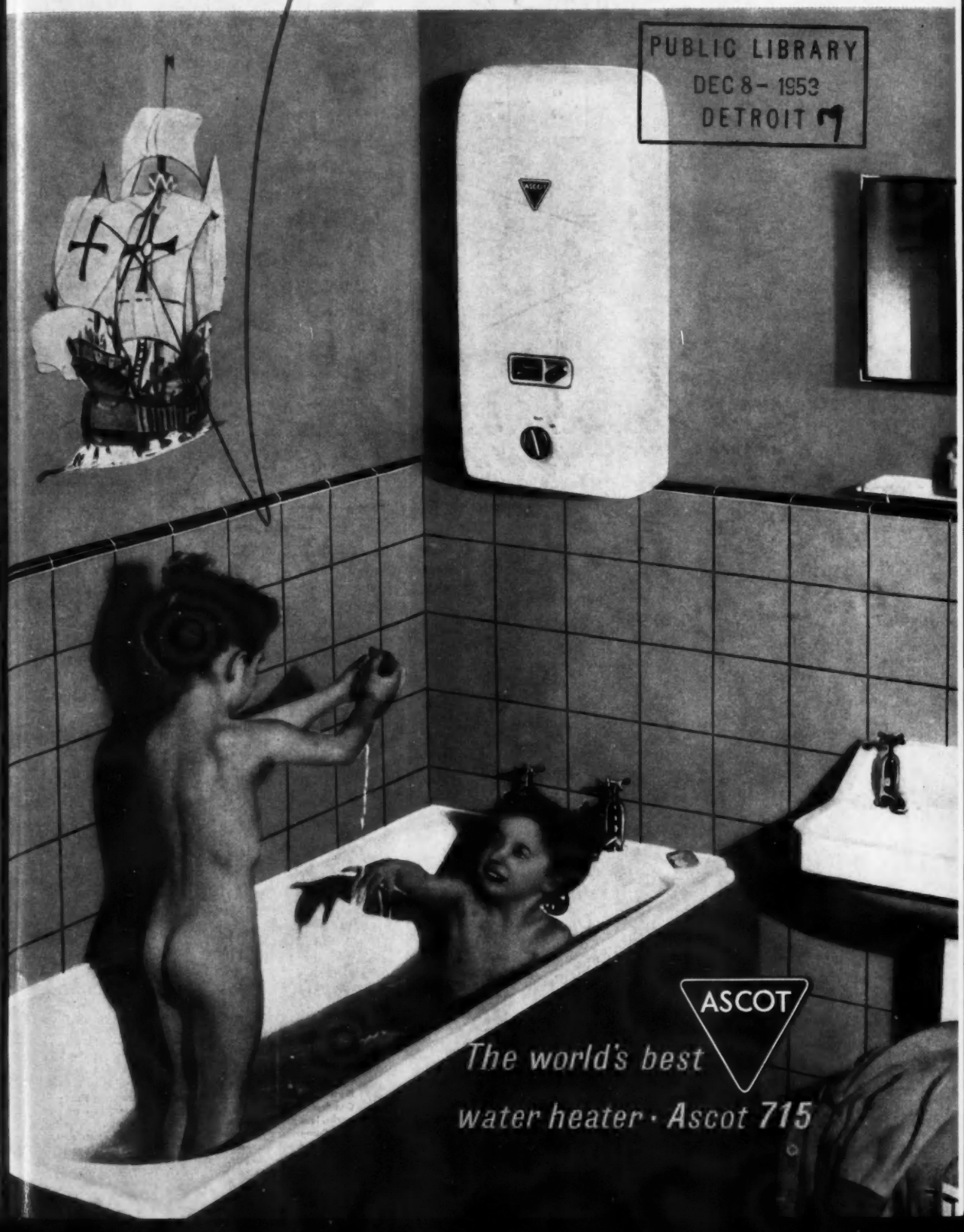

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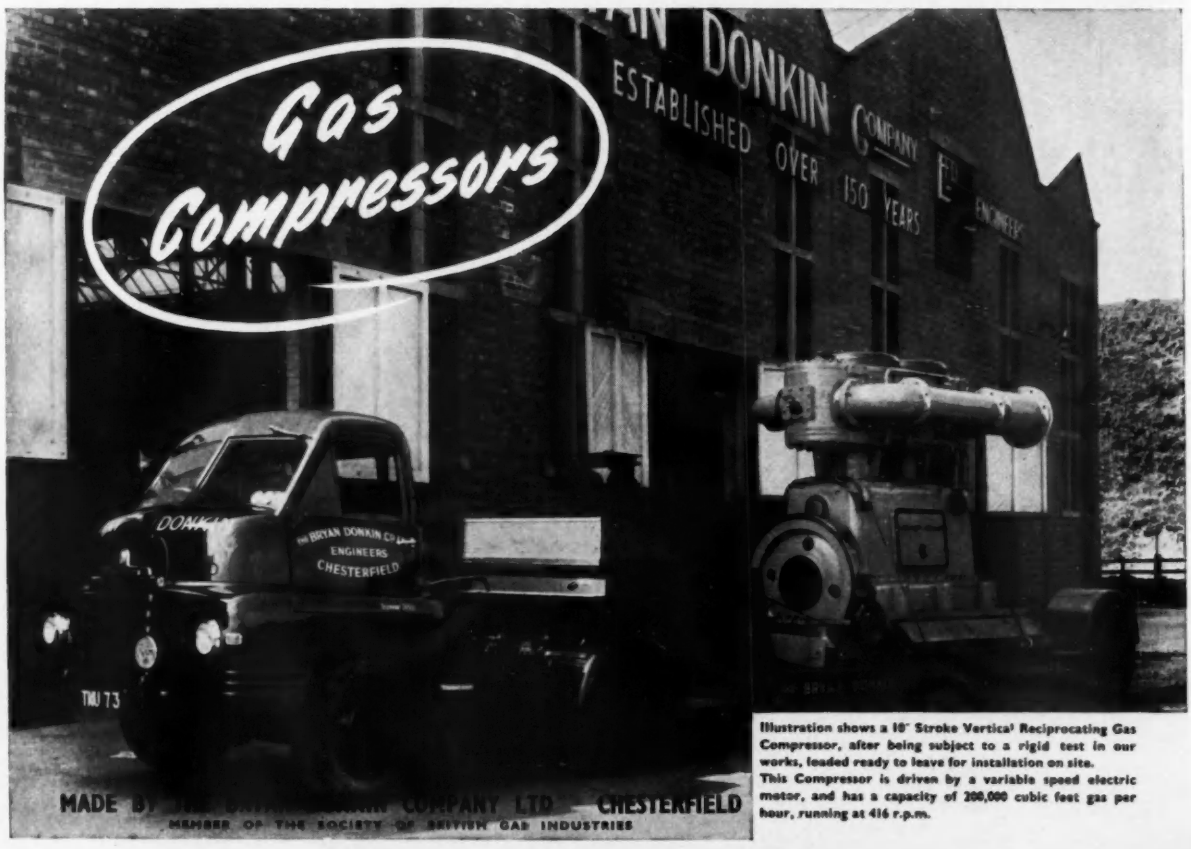

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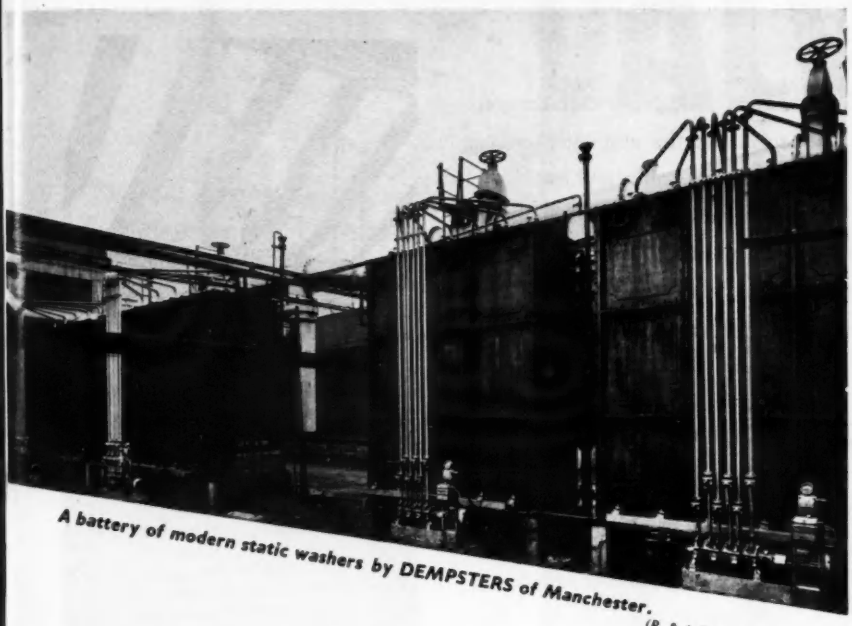

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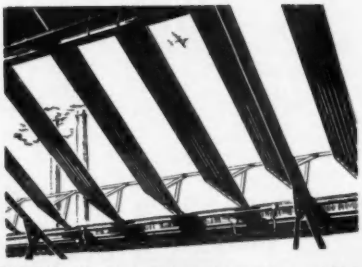

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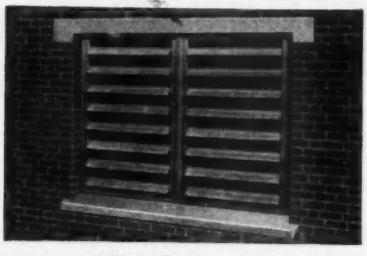

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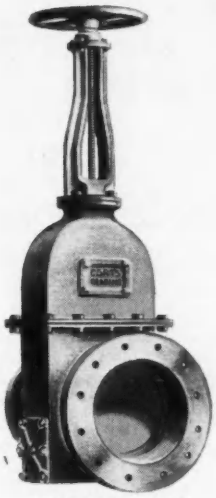
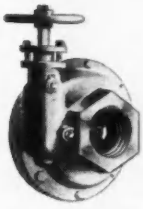


DOUBLE GATE

TOWNDROW ROTARY



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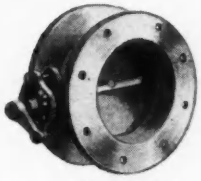
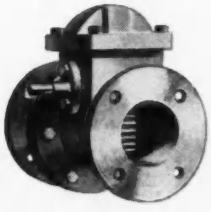


THROTTLE

LIQUOR



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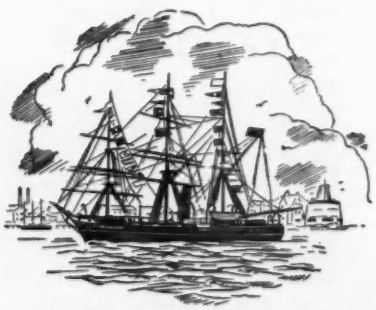

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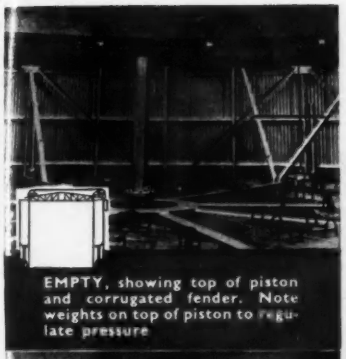
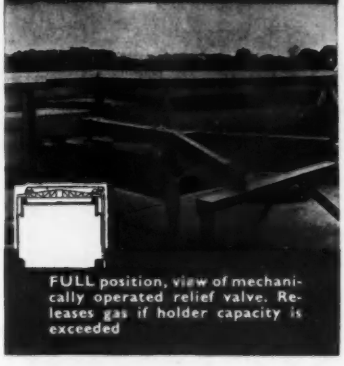


EMPTY, showing top of piston and corrugated fender. Note weights on top of piston to regulate pressure

HALF FULL position, showing inflated seal constructed of a synthetic rubber coated fabric



FULL position, view of mechanically operated relief valve. Releases gas if holder capacity is exceeded

Features of the WIGGINS Dry Seal Gasholder

The Wiggins Gasholder operates on the principle of piston displacement. A frictionless, movable piston floats on the confined gas, rising and falling with changes in volume. The seal—a synthetic rubber-coated fabric—is protected against wear by ample clearances. The system requires practically no maintenance and no replacements. The Wiggins Gasholder is a structure free of unsightly framework.

1 The piston rises nearly to the roof of the shell giving maximum capacity.

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7 The shell is gas-tight up to the seal connection.

8 Foundations are simple and inexpensive as only the shell weight has to be supported.

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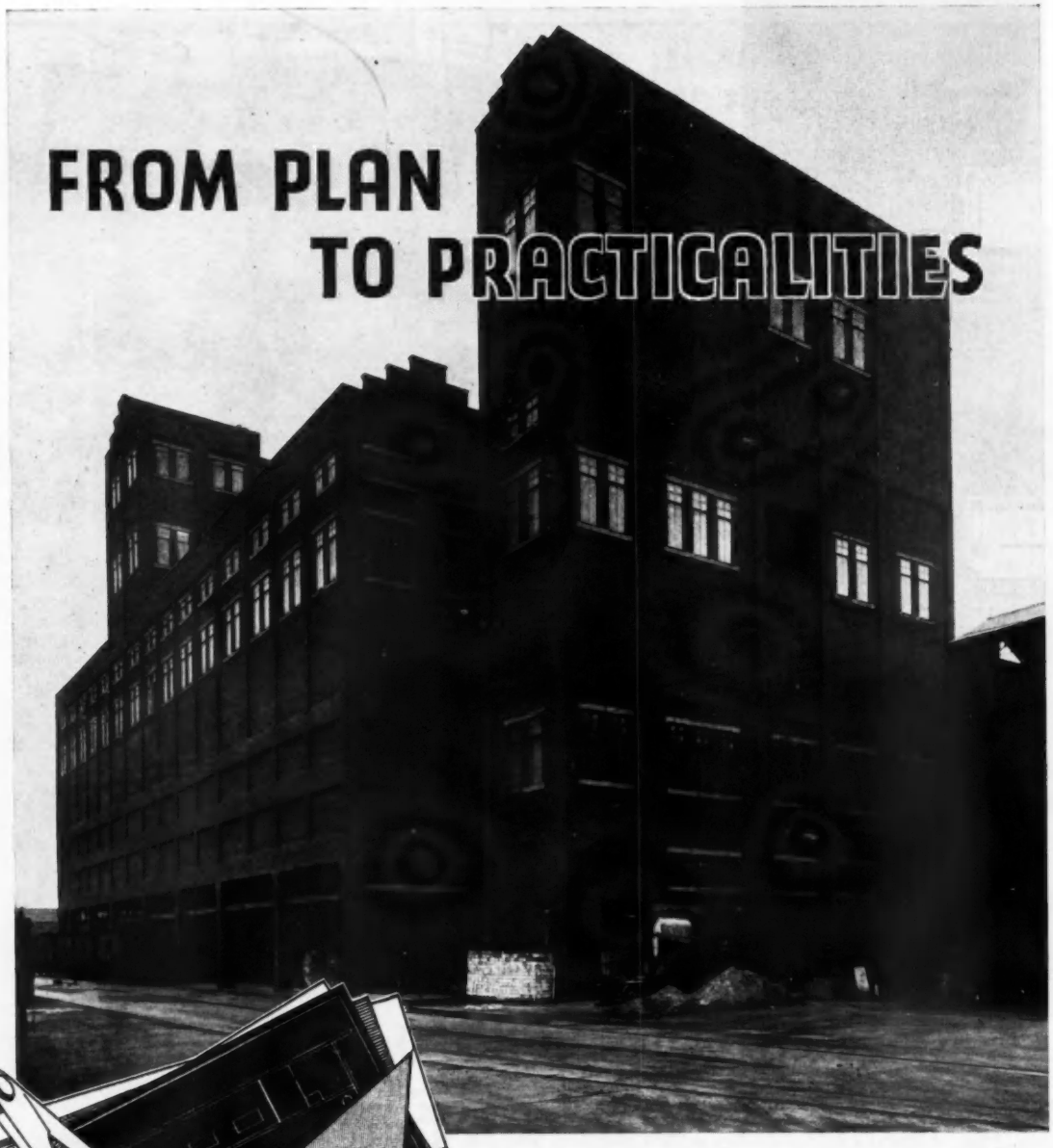

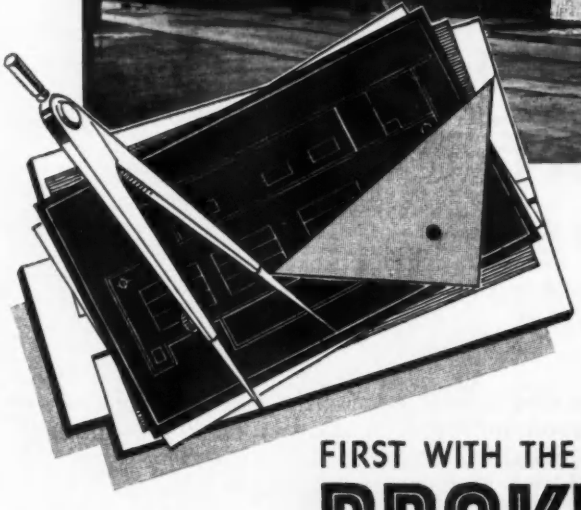

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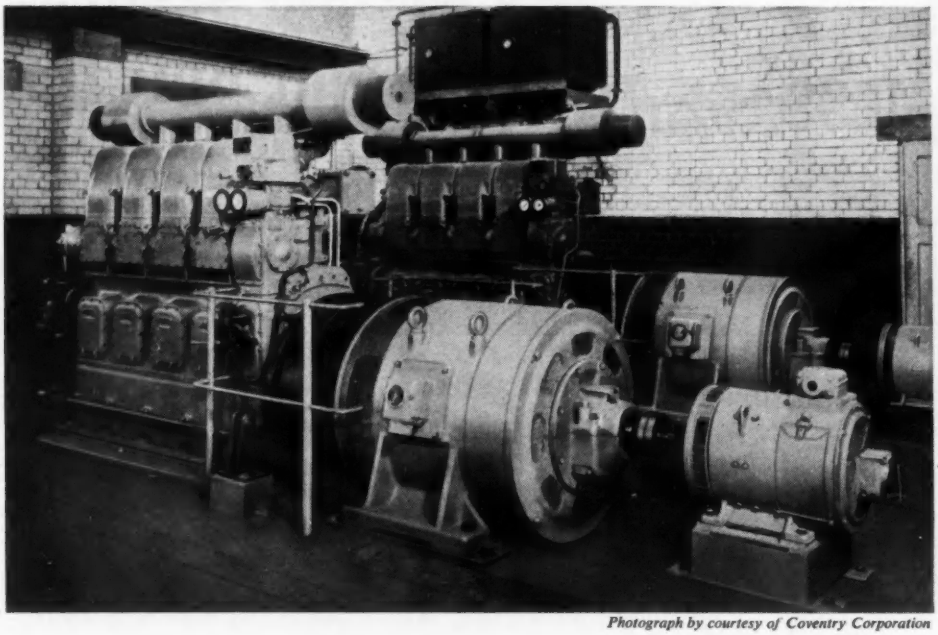

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The illustration shows plant of this type installed at the Finham Sewage Works of the City of Coventry Corporation.

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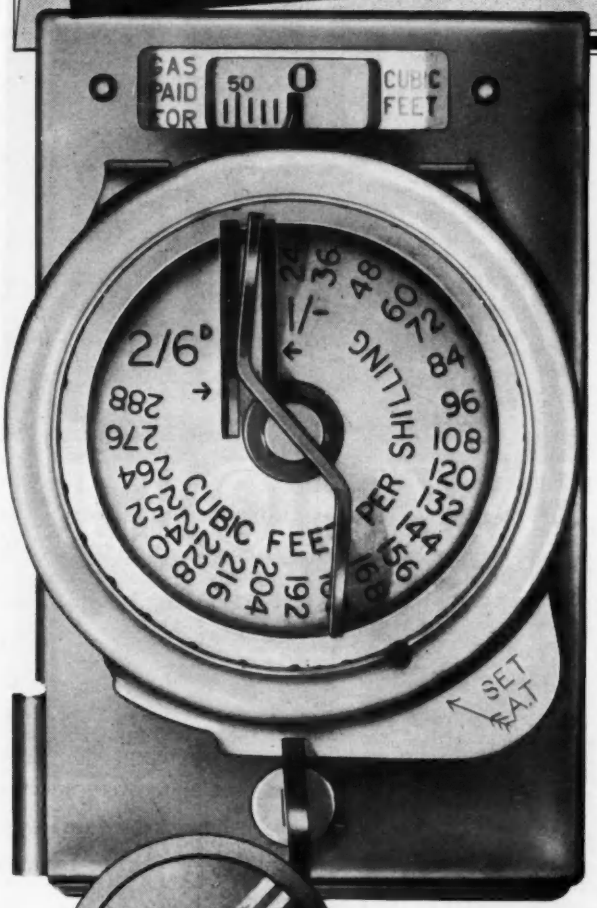

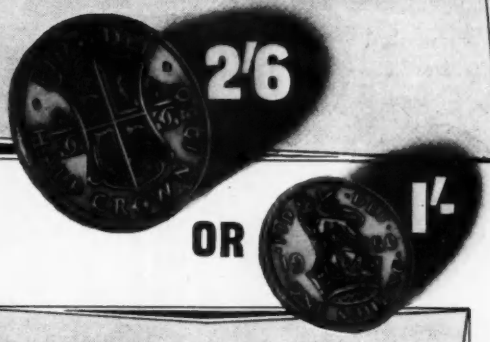

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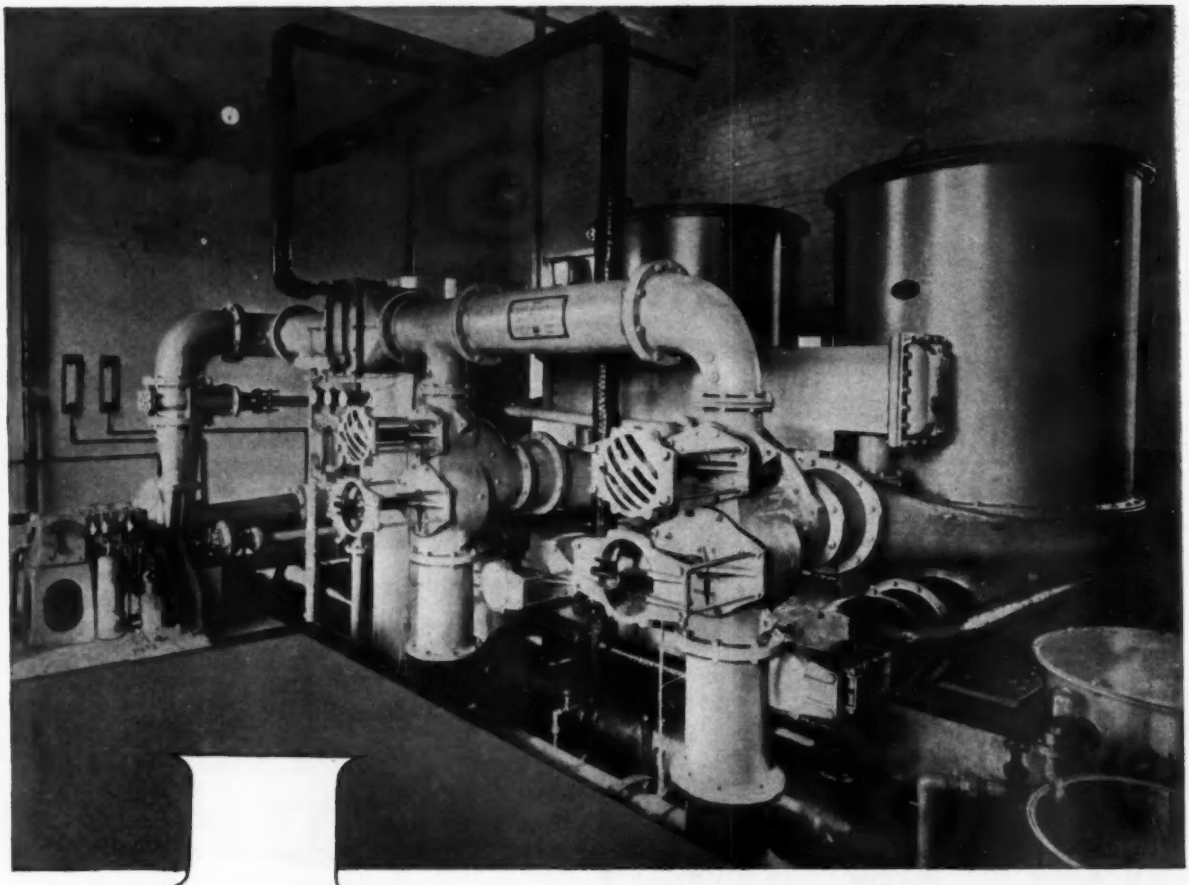

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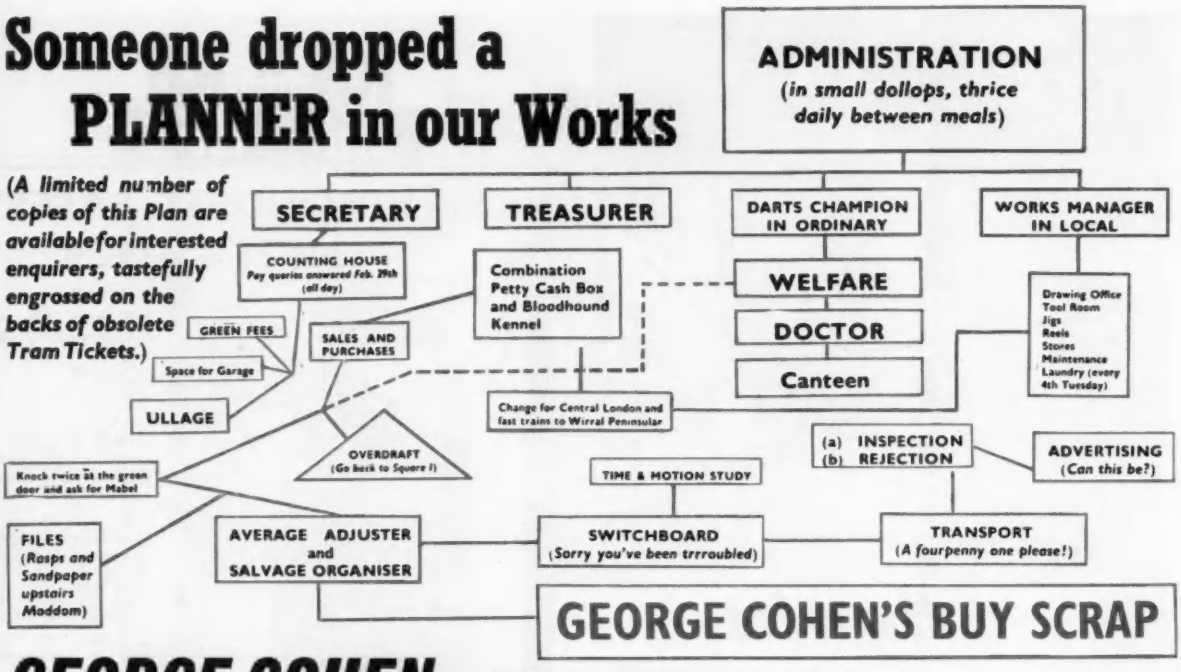

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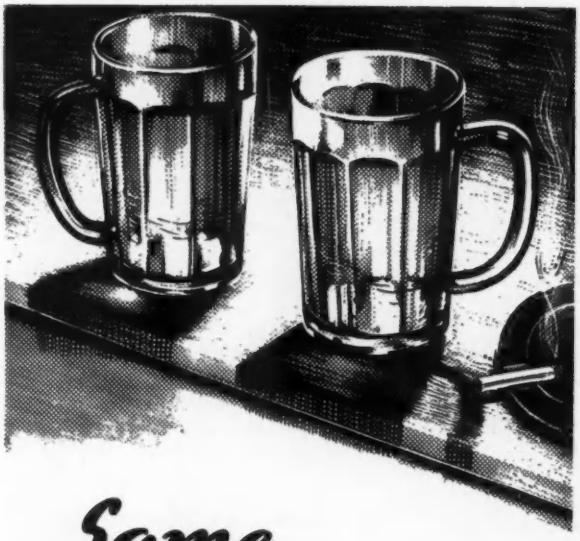

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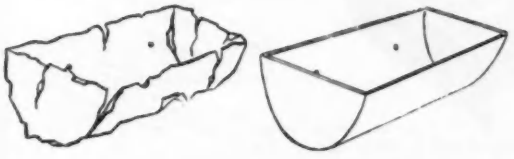

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- **DO** remember that good quality is cheapest in the long run
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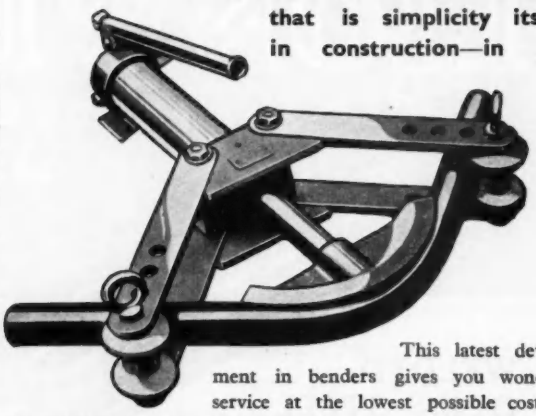

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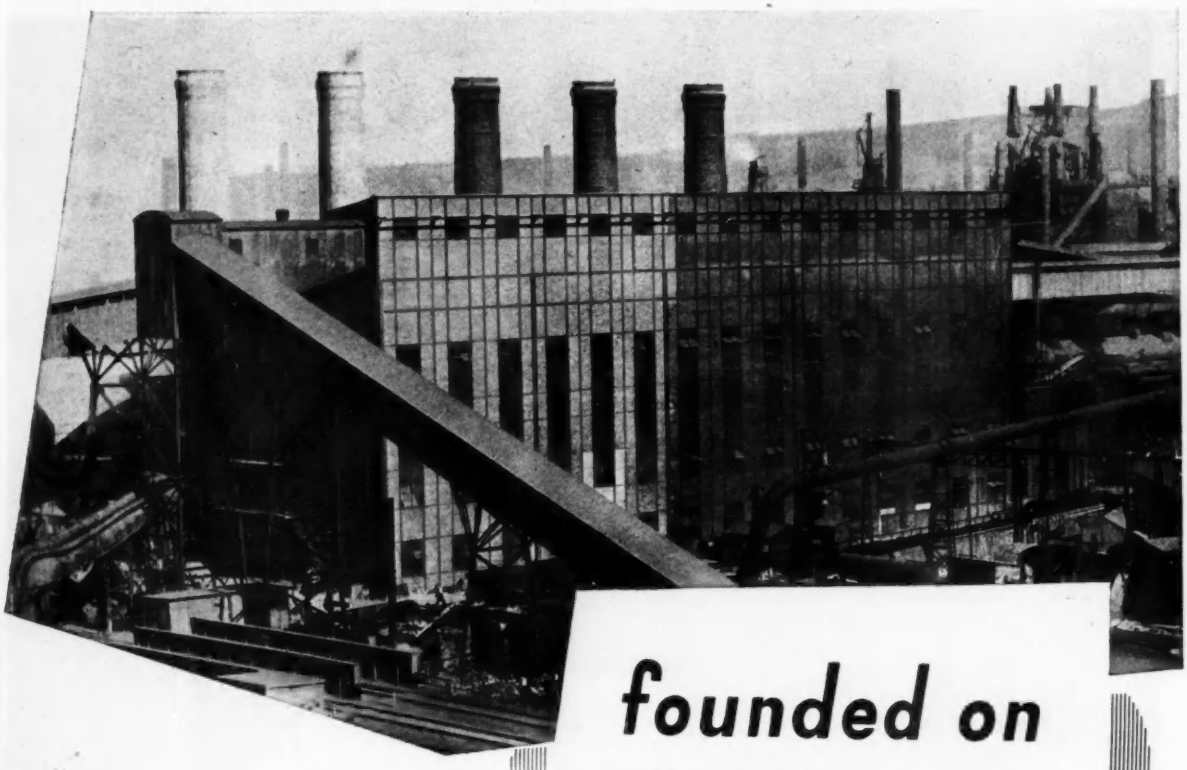

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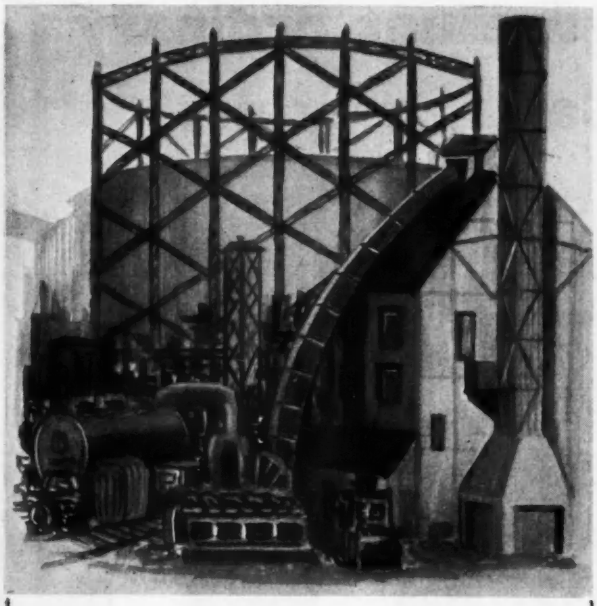

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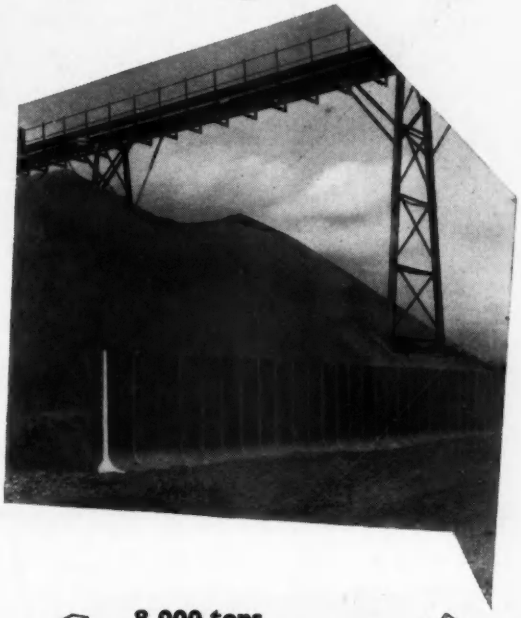

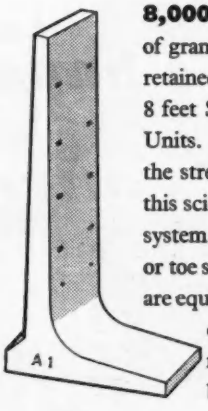

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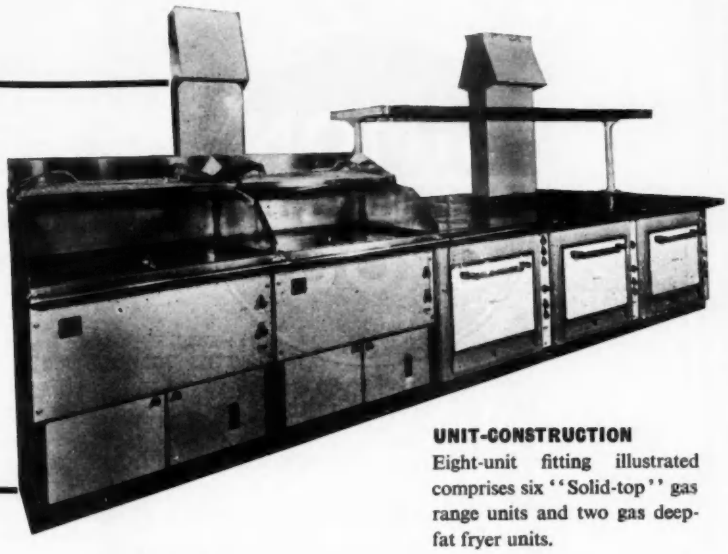

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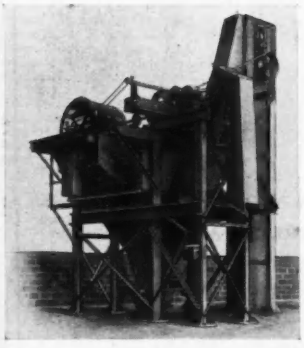

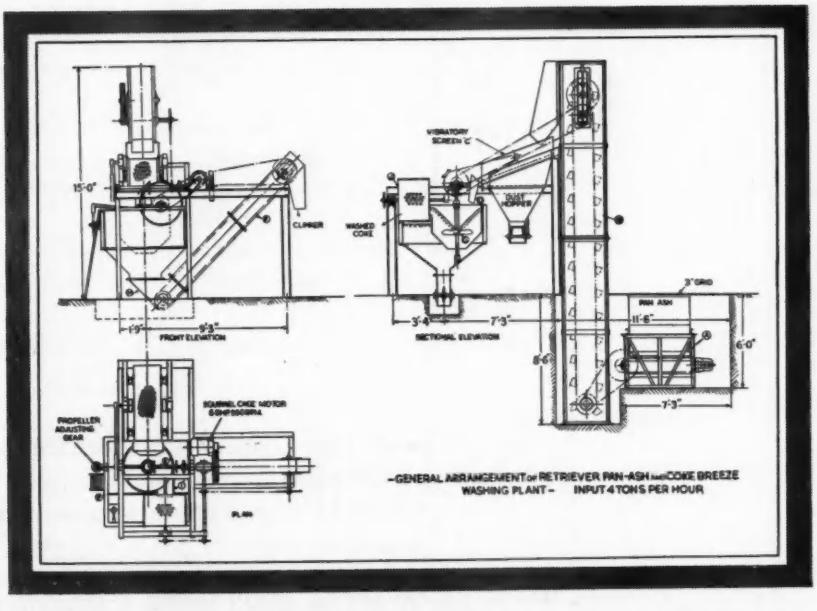

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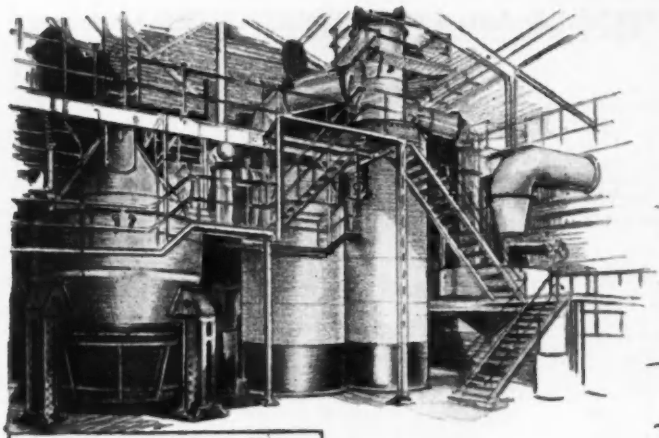

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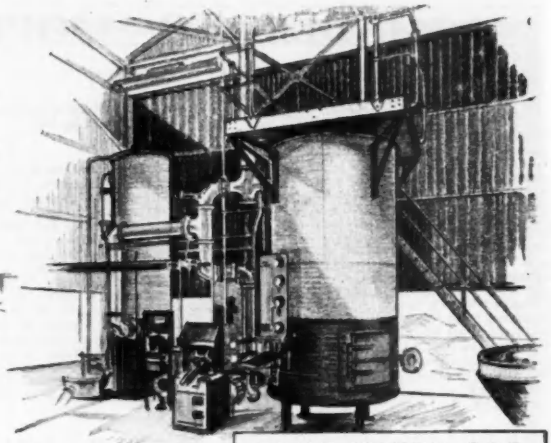

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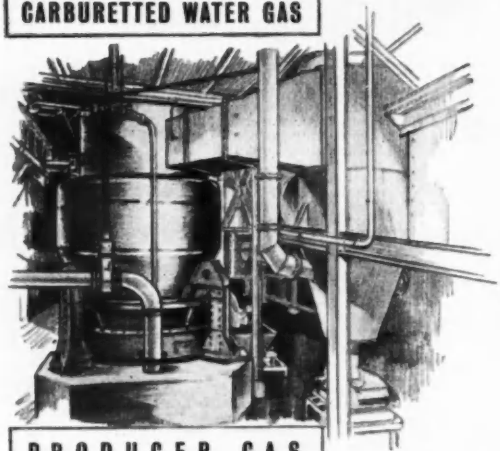

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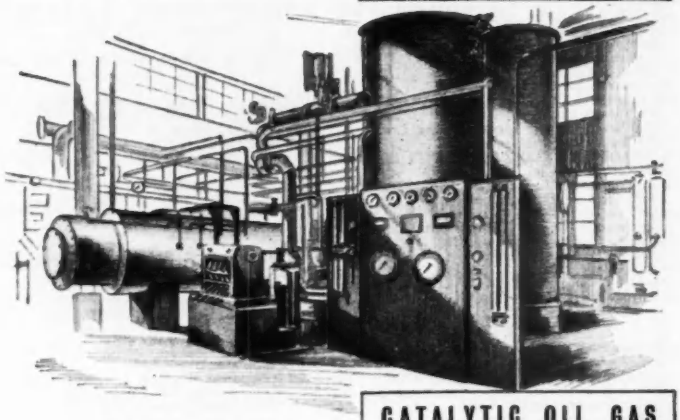

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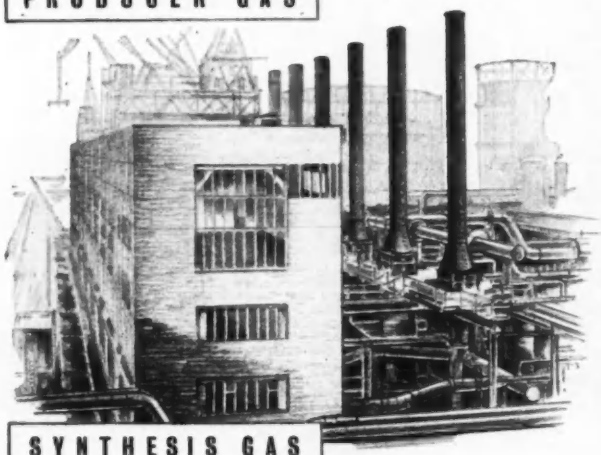

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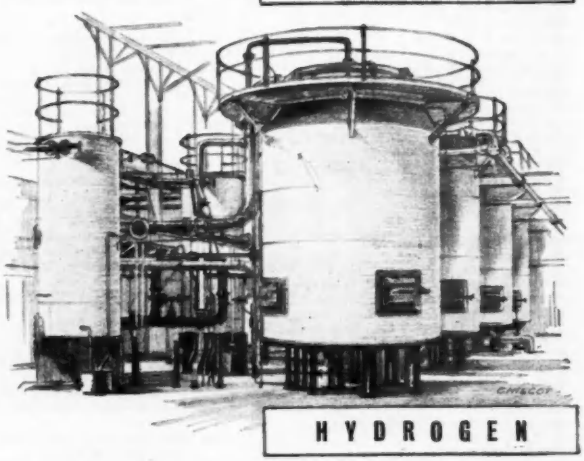

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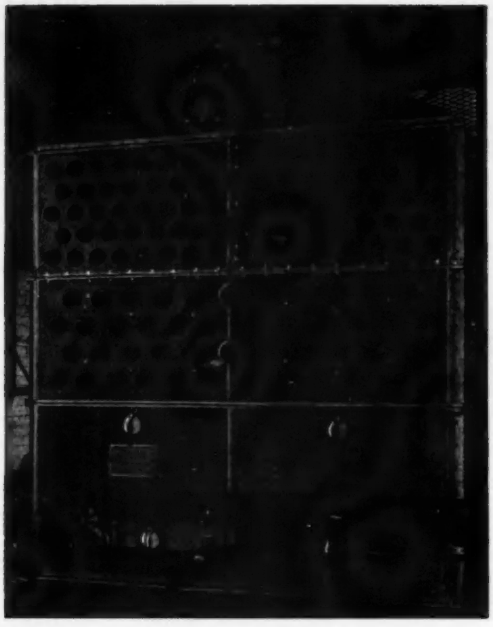

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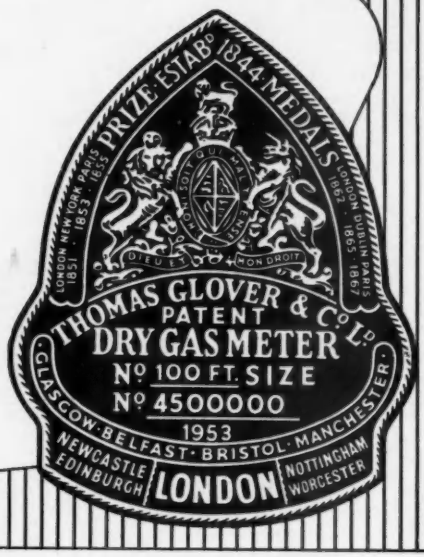

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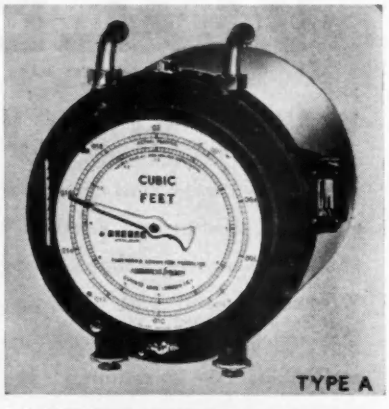

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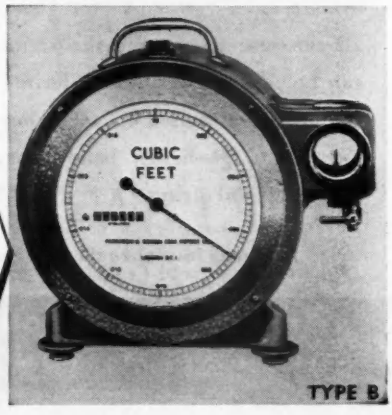

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GAS JOURNAL

VOL. 276. No. 4721 105TH YEAR November 25, 1953

ORGANIC SULPHUR REMOVAL

As we mentioned in these columns a few weeks ago, discussing *inter alia* the pressing need for the reduction in organic sulphur compounds in town gas, it is over 10 years since a Committee of Enquiry set up by the Institution of Gas Engineers recommended that as a first step the organic sulphur compounds in all town gas should be reduced to 10 grains per 100 cu.ft., and, secondly, that gas undertakings should be encouraged to make better use of the facilities then available to attain a lower limit of 3 grains per 100 cu.ft. Six years prior to this (in 1936) the Joint Research Committee of the Institution and Leeds University in a similar report stated: 'An all-round reduction of the sulphur content of town gas to 10 grains per 100 cu.ft. would represent an immediate advance which is both possible and strongly to be recommended.' Section 12 of the Gasworks Clauses Act, 1871, enacted that the gas supplied 'shall as to its purity not exhibit any trace of sulphuretted hydrogen when tested' in the prescribed manner. Provisions, it is interesting to recall, were formerly inserted in a considerable number of Special Acts imposing restrictions in regard to the amount of sulphur impurities in the gas in addition to the requirements of Section 12.

The truth of the matter is that at this period, when gas was used for lighting via the luminous burner, to obtain sufficient illumination it was necessary to burn gas fluelessly in a room at a rate of anything from 15 to 20 cu.ft. per hour, and the presence of any considerable quantity of sulphur in the gas simply could not be tolerated. In 1905 the restrictions to which we have referred were repealed, due to the advent of the incandescent mantle. In 1953, to comply with statutory regulations, town gas may not be distributed with a hydrogen sulphide content exceeding 1.5 parts per mill. It is wholly anomalous that no limit is placed on the organic sulphur content, which varies between 15 and 45 grains of sulphur per 100 cu.ft. And, as we have emphasised so often, this sulphur causes corrosion in domestic appliances, particularly water heaters, limits the use of flueless heating, and has undesirable effects in industrial application. It costs a great deal of money and much dissatisfaction.

One of the first processes for the removal of sulphur from town gas was the catalytic process worked out and operated by the South Metropolitan Gas Company. Rather more than half the gas made was treated in the Carpenter-Evans plant, which was operated from 1913 to 1939, the sulphur content being reduced to about 10 grains per 100 cu.ft. For economic reasons this has not since been in action. A normal benzole washing plant will reduce the organic sulphur content by about one-third. A plant of the high oil circulation type, or an active carbon plant, will reduce it further. The point is that the application of these processes is controlled by the economics of benzole washing.

In our issue last week (p. 461) we were glad to announce that Whessoe Ltd. have been appointed a licensee of the North Thames Gas Board catalytic process for the removal of sulphur compounds—which may be regarded as a successor to the process pioneered by Carpenter. The North Thames plant, however, relies on oxidation, not reduction, and full advantage has been taken of modern methods of heat interchange. A plant of 1.5 mill. cu.ft. a day capacity has in fact been in operation at the Board's Harrow works since 1938. The process reduces the organic sulphur content of coal gas to 10 grains or less per 100 cu.ft. It does not eliminate thiophen. If, however, it is used in conjunction with a benzole extraction plant, which removes most of the thiophen, the sulphur content can be reduced to a matter of 2 to 5 grains per 100 cu.ft. We would add that the North Thames plant destroys nitric oxide and thus prevents gum formation.

The plant was succinctly described in our issue last week, the underlying principles of the method being clarified by a flow diagram. We have since been informed that units of the type will be manufactured by Whessoe Ltd., in two capacities—a 2-mill. cu.ft. per day and a 4 mill. cu.ft. per day—and that shortly a plant is to be installed at one of the works of the N.T.G.B. Regarding economics, the total cost, including capital and running costs, was given by Dr. R. H. Griffith in 1952 as less than 2% of the cost of distributed gas. Based on present-day costs of plant and services, and depending on the capacity of the plant and the organic sulphur content of the gas, the cost is expected to be of the order of 0.3d. per therm. This is a small price to pay for the economic and prestige benefits which would obviously follow. We think that the gas industry would find it in its interests to throw aside its apathy on the sulphur-in-gas question. We would end this note by a quotation from

Dr. Charles Carpenter in a speech at a meeting of the Institution of Gas Engineers in 1914—nearly forty years ago. He commented: 'I urge you to look on this matter from the point of view of those who are immediately concerned with the sale of gas. I think we require to give a much more open ear to those who have to sell our gas and have to tell us what the users have to say about it . . . . We engineers in the past have been too wholly governed by the requirements within our works. My belief is that the day will come when the ideal of the elimination of sulphur compounds will be resuscitated.' Let us hope that the ideal will in fact be resuscitated now and that action will follow without further time-lag.

GASHOLDERS AND ÆSTHETICS

We have published a good deal recently on gasworks in relation to amenities not only in this country but also abroad. As related in the 'GAS JOURNAL' last week, our colleagues in France continue to apply themselves to the æsthetic aspects of gas manufacture and utilisation. The problem has been treated at length by MM. Combet and Villon, more recently by MM. Kec and Verret at the International Congress of Industrial Æsthetics. The latter authors find the gasholder an 'intractable factor;' and 'the universal voice proclaims its ugliness.' In our own country the question of amenities and gas production has loomed large at Oxford, and, as is well known, the Southern Gas Board, after protracted negotiation and official enquiry at high level, agreed, as soon as circumstances permit, to move the works altogether from the present site north and south of the Thames. Turning to the gasholder in particular, we recall the views of a correspondent that a gasholder of modern design and standard dimensions is æsthetically more attractive than a squat erection in which the diameter is not correctly related to height. 'I am quite sure,' he wrote, 'that the great majority of people, having resigned themselves to the fact that a gasholder had to be erected in their midst, would not give a hoot whether the height was 125 ft. or 150 ft.'

The foregoing has point when we turn to the Report of the Committee on Gas Storage appointed by the Ministry of Fuel and Power and the Ministry of Housing and Local Government with the following terms of reference: 'To enquire into the latest methods of storing gas, to investigate the comparative cost of these methods, and to consider whether any changes in method are practicable with a view to the preservation of amenities.' Chairman of the Committee was Mr. R. N. Quirk, formerly with the Ministry of Fuel and Power. Membership included Mr. F. M. Birks, Deputy Chairman of the North Thames Gas Board, and Mr. F. G. Brewer, Secretary of the Gas Council. And the Committee has come to the conclusion that gasholders of good engineering design can be impressive and satisfying elements in an industrial scene, and that, in general, considering the very large numbers of holders throughout the country, it is surprising to find how relatively few really offend by clashing with other features of the townscape.

The opinion of the Committee—and this is not at all surprising—is that the spiral-guided holder (apart from the possibility of the development of high pressure storage) is the most likely type for use generally in the future. It will be agreed, we think, that there is nothing incongruous in the juxtaposition of gasholders with such structures as blast furnaces, coal mines, power stations, and factories. And if a gasholder has to be sited in a place where amenity may be damaged, it is often possible to reduce the damage by suitable painting, screening by trees, and adjusting the proportion and size of the holder so as to reduce its visible bulk. 'It should be possible to construct squat holders without appreciable additional cost.'

Aluminium paint and graphite-based and titanium-oxide paints gain high marks in the report, and the suggestion is thrown out that gradation of shade from light at the top to dark at the bottom has quite a useful effect in reducing the apparent bulk of the holder. In regard to the planting of trees, the point is made that planting close to the viewpoint is normally more effective than planting close to the holder. In any case, the Committee suggests that the advice of landscape architects should be sought in planning screens to gasholders. What interests us particularly is that the North Thames Gas Board does not contemplate renewing gasholders of less than 1 mill. cu.ft. and that it does not normally intend to install new holders of more than 4 mill. cu.ft. This is a matter in which practice in the gas industry as a whole has not yet been crystallised, and it would be useful to have the views of other boards.

Finally, a note on high pressure gas storage—*i.e.*, pressures several times greater than 50 lb. per sq.in. Preliminary study suggests that, with suitable demand conditions and the possibility of recovering some of the costs of compression by generating the electricity by expanding the gas through turbines, high pressure storage might have a cost advantage over low pressure. There is, however, a strong body of opinion in the gas industry against this suggestion. Obviously more detailed examination of this special problem is desirable.

The Committee's report is not being placed on sale or published in the ordinary way. Copies are, however, available to organisations interested in the subject, and enquiries should be addressed to the Gas Division of the Ministry of Fuel and Power.

NATURAL GAS IN CANADA

The population of the Edmonton and Calgary districts is 398,000, and there are already more than 102,000 natural gas consumers. This year 75,000 will be added. Taking an average of four people to a house, it would seem that natural gas has ousted all competitive fuels. It is in a province, too, which is world famous for its extensive coal measures and for the rapid evolution of oil output, especially during the last six or seven years. The reason is not hard to find. On a B.Th.U. basis fuel oil costs about four times as much as natural gas. These figures are given in the *Canadian Gas Journal*. Gas is sold to industry on an interruptible basis. All large industrial concerns are encouraged to have standby equipment in case of failure of the pipeline, though there has been no failure so far. The population of Winnipeg represents nearly 6% of the Canadian total. At present, town gas is supplied by the Winnipeg and Central Gas Company, and increased operating expenses, including the inability to recover them by increases in coke sales prices, necessitated an increase in gas rates of from 16% to 20% effective from last April. According to the Vice-President and Manager of the Company, Mr. A. H. Harris, this precludes any material expansion of business in competition with other fuels. The picture is such that existence of the Company for any extended period is entirely

dependent on obtaining a cheaper source of gas supply than the current plant is capable of producing. In any case the coke oven plant is on its last legs. 'There is,' Mr. Harris has explained, 'a dire need of a source of natural gas at the earliest possible moment.' The Company is looking to one of the pipeline companies to come to the rescue, and in the event of successful negotiations is prepared greatly to expand its distribution system to cover the whole of the Greater Winnipeg district.

WHERE IS THAT SMILE?

The seraphic smile which has suffused the face of Mr. Therm since first he became the envied mascot of the gas industry, is temporarily gone. Instead his mouth curves downward, producing an expression of acute distress. The reason for this sudden depression is abundantly clear in the Gas Council's latest advertisement layout for the 'thinking' Press, which is entitled 'A Fortune Up the Chimney' and shows Mr. Therm, mounted on a chimney stack, watching a cloud of black smoke escaping into the atmosphere, bearing with it a host of valuable by-products. Perhaps when the Smog menace is removed, our hero will regain his customary good spirits.

SELF CRITICISM

It is the practice in certain countries to criticise oneself publicly and with every outward sign of cheerfulness at being given the chance to defame man's worst enemy without being sued for libel. The British do not usually require to indulge in such a practice, and so it is a refreshing change to read an annual publication designed less for an exposition of the achievements of an organisation's latest year of existence than for a sober reminder to interested parties that stones have been left unturned.

The International Association for the Exchange of Students for Technical Experience (IAESTE) has made solid progress since its inception in 1947. This is admitted in the sixth annual report. 'The results obtained in 1953 in exchanging internationally 3,783 students show a further numerical increase during the year of 290' is one of the few sentences giving a hint of some moderate success. But if the tables and charts are consulted, one sees that in six years the number of students exchanged has increased from 920 to the present figure; that in 1948 the number of industrial and other organisations receiving foreign students under IAESTE was 413, as compared with 1,733. The Association is completely independent of support from other organisations. The report leaves the praiseworthiness to be gleaned from the statistics. For the rest, such a phrase as 'The administration of the exchange in some member countries still leaves much to be desired' indicates the healthy state of mind of the Association. For our part, we applaud the activities of the organisation and would like to know why only one gas engineering student was sent abroad (from Britain) under IAESTE as compared with, say, 600 electrical engineering students from 16 countries, including 74 from these isles.

MANUFACTURE OF 'CLEAN' OVOIDS

We have already referred to what may be termed the 'gas aspect' in the paper on 'French Power Resources and their Utilisation,' given this month to the Institute of Fuel by M. J. Couture, Charbonnage de France. Two other subjects touched on by the author concerned plans for tidal-power stations and the steps which are being taken to supply the domestic solid fuel market with briquettes from low-volatile coal. There is a great shortage of graded low-volatile coals in France, and a 'clean' ovoid (maximum ash content, 9%) is being manufactured to replace anthracite among a class of consumer who is prepared to pay a higher price for a more refined fuel. These ovoids appeared on the market two years ago. There has been a lively demand and the available tonnage has increased progressively. Most interesting is the method of treatment now being started, which aims at getting rid of a disadvantage of these ovoids—the emission of a small amount of smoke, due to the pitch used in the briquetting process—when the fire is lighted and when fresh fuel is added. The procedure is both simple and cheap, and it has nothing to do with low temperature carbonisation. The ovoids are subjected to a preliminary heating at about 300°C. in a slightly oxidising atmosphere. M. Couture explained that the gases leaving the heating chambers carry with them a small fraction only of the weight of the fuel, and that there is no case for the recovery of by-products.

TIDAL POWER

The major tidal-power project in France is on a gigantic scale. It provides for 17 Km. of sea-wall between the Chausey Isles and Cancale Point and of 15 Km. between the Chausey Isles and Granville Point. The basin formed has an area of 230 sq. miles, and the project envisages an annual power production of between 10,000 mill. and 20,000 mill. kWh. This is, of course, 'in the air.' To put the matter in perspective the latest report of the British Electricity Authority gives a figure of 52,250 mill. units generated for sale during the year ended March 31, 1953. The electricity industry in France is, however, contemplating immediate action on the harnessing of tidal power on a more modest scale; and it is clear that the more modest the venture the greater is the relative overhead cost of sea-wall construction. Electricité de France has in fact petitioned for a concession to build a tidal-power station on the estuary of the Rance. With single-effect generation, the basin, which would enclose an area of 7.7 sq. miles, would provide 550 mill. kWh a year. In practice, said M. Couture, a tidal-power station could supply electricity at a cost only slightly higher than that of a power station situated on the course of a big river. . . . The Rance is regarded as ripe for inclusion in the hydro-electric power programme of Electricité de France in the near future. In 1952 hydro-electric stations in France produced 22,400 mill. kWh. Installed capacity in Great Britain is 172,823 kWh.

NATURAL GAS EXPLORATION IN U.K.

EXPLORATION work for natural gas which the D'Arcy Exploration Co. (Anglo-Iranian's prospecting subsidiary) is undertaking for the Gas Council began last week about 10 miles from Beverley at Aldbrough, S.E. Yorkshire. A seismic survey party will be working in the area for about three weeks and will then move in the direction of Market Weighton.

The party comprises about 10 technicians with drivers and workmen, making up about 20 in all. They are equipped with light drilling outfits for boring shot holes. Each hole is about 100 ft. deep and 5 in. in diameter and in this a charge of explosive is placed and fired. The vibrations thus set up are recorded on delicate instruments. From a series of such observations the shape of the sub-surface rock structure can be deduced. In this way it has been possible in other parts of the world to map the underground structure down to depths exceeding three miles, though it is not anticipated that it will be necessary to probe such great depths in this area. If conditions are shown to be favourable, drilling sites will then be selected.

Previous exploration carried out some years ago for oil has already revealed a suitable area containing gas at Cousland, Midlothian, and it is hoped to begin a test well there before the end of the year. The drilling derrick and any other temporary installations, such as water pipelines and tanks, are necessary only during the few months of actual drilling and are removed when the well is complete. If gas is found there may be a temporary period when it is necessary to burn a flare in order to test the quantity of gas available.

The gas produced is found in minute pores or fissures of sandstone or limestone. When the gas is withdrawn the underground formation remains as solid as before, so that there can be no risk of subsidence. Equally the explosions fired in seismic work cause no damage to the underground structure.

Personal Notes

WHESSOE, LTD., announce that they have recently completed a consulting agreement with DR. H. HOLLINGS, O.B.E., D.SC., F.R.I.C., M.INST.GAS E., F.INST.F., whereby he will advise them on all matters pertaining to gas purification and processes ancillary thereto, including by-product recovery.

MR. HARRY RAISTRICK, Superintendent Meter Inspector, Bradford Group, North Eastern Gas Board, and MR. EDWARD HARRISON, of the Rental Section, have each received a presentation from the Bradford staff to commemorate their retirement. Mr. Raistrick retires after 41 years service, and Mr. Harrison has been 16 years with the industry.

MR. DAVID J. LANGSTON (28), a chemical assistant employed in the North Thames Gas Board's Fulham laboratories, has been awarded this year's Milne-Watson scholarship by the Board. Founded in 1946, the scholarship is awarded annually to 'the most promising employee of the year.' Educated at Buckingham Gate Central School, Mr. Langston was evacuated with the school during the war. In 1943 he joined the R.A.F., being trained as a navigator, and on demobilisation in 1947 was employed in the Physics Department at Imperial College. Three years later he joined the North Thames Gas Board in his present capacity, and began to study physics in his spare time with a view to taking his B.SC. The scholarship will enable Mr. Langston to pursue his studies with a full-time degree course.

MR. E. J. PERKS has been appointed by Meters, Ltd., as General Sales Manager of their group of companies, J. & J. Braddock, George Orme & Co., and Sawer & Purves. Mr. Perks, prior to taking up his new appointment, was Midlands Manager for Ascot Gas Water Heaters, Ltd., and had been with the Ascot Company for the past 20 years. He commenced his duties with Meters, Ltd., at the beginning of November and is now established at the company's head office at 51, King Street, Manchester.

MR. J. M. PUMPHREY, M.B.E., T.D., has been appointed by the National Coal Board to be Production Director of the Northern (N. & C.) Division of the Board, in succession to MR. R. D. GLASS, who is leaving to take up a senior mining position in South Africa. Mr. Pumphrey, who will take up his appointment on January 1, is Production Manager of No. 1 (South Northumberland) Area of the Northern Division. MR. J. SMILLIE, PH.D., is to be Production Director of the West Midlands Division in succession to MR. H. J. CROFTS, C.B.E., who recently retired after a lifetime in the coal industry. Mr. Smillie was agent for a group of collieries in Notts. and Derbyshire at the time of nationalisation, subsequently becoming an Area Production Manager in the East Midlands Division of the Board. In 1950 he became General Manager of the Cannock Chase Area in the Board's West Midlands Division.

MR. LESLIE HARDERN, Public Relations Officer to the North Thames Gas Board, has been elected President of the Incorporated Advertising Managers' Association.

MR. S. W. HAYES is now Hon. Secretary of the Western Junior Gas Association, and all communications should be addressed to him at the Gas Offices, South Western Gas Board, The Strand, Barnstaple, Devon.

Obituary

MR. WILLIAM MCMICHAEL, of Oundle, Northants, for a number of years, until the nationalisation of the gas industry, chairman of the Oundle Gas Company, has died at the age of 87. From 1911 until his retirement last June he was in business as a coal merchant at Oundle and for some time he was also a member of Oundle Urban District Council.

MR. DONALD M. BROWN, Director and Commercial Manager of Keith Blackman, Ltd., died on November 17 in his 70th year. He had served the company for 54 years. Mr. Brown began his career in 1899 with the Blackman Ventilating Co., Ltd., and was placed in charge of the ventilating department in 1909. In 1938 he was elected to the Board and three years later was appointed Commercial Manager.

MR. ARCHIBALD HAMILTON, who was Chairman of Archd. H. Hamilton & Co., Ltd., paint manufacturers, Possilpark, Glasgow, died suddenly on November 13, at his home at Dalrymple, Ayrshire. He was 65. The business was founded by his father nearly 70 years ago. During the first world war he served with the Army in the Middle East. He had served for a term in 1938 as convener of the Paints and Oils Section of the Glasgow Chamber of Commerce.

MR. F. G. SHAW, who retired in 1944 from the position of Engineer and Manager of the Buxton Gas Department after holding the appointment for 33 years, died at Blackburn after a short illness on November 14 at the age of 69. He entered the gas industry as a pupil under Mr. Alex H. Smith, Engineer and Manager at Darwen, and was for seven years Assistant Engineer and Manager there before his appointment at Buxton in 1911. On his retirement, when he was succeeded by his assistant, Mr. H. H. Knowles, he took up consulting practice. Mr. Shaw had been a district member of the Institution Education Committee and Chairman of the Lancashire District Gas Education Committee, and also a member of the Gas Engineering Advisory Board for No. 10 region. In addition he was a member of the committee of the Lancashire Commercial Section, and Vice-Chairman of the Association of Smaller Municipal Gas Undertakings. He was President of the Manchester District Association of Gas Engineers in 1934. Mr. Shaw was closely associated with the late Mr. Rupert King, then Editor of the 'GAS JOURNAL,' in raising the Shewring Fund in 1936 for the benefit of the widow of Mr. H. Shewring, Engineer and Manager at Cambridge and formerly of Rochdale, who lost his life in a gallant attempt to rescue a friend overboard from a yacht in the Channel. For several years the fund was administered by trustees, whose duties ceased when the balance of the fund was handed over to Mrs. Shewring in 1951.

Diary

Nov. 26.—NORTH THAMES G.C.C.: Westminster City Hall, Charing Cross Road, 2.30 p.m.

Nov. 26.—BRITISH GAS STAFF ASSOCIATION: 'Unity for Gas Staffs' meeting, Onward Hall, Deansgate, Manchester.

Dec. 1.—MIDLAND JUNIORS: 'Manufacture of Concentrated Liquor in plants with Vapour-phase and Liquid-phase Decarbonation,' N. Calvert; Staff Mess Room, Council House, Birmingham.

Dec. 2.—SOUTH WESTERN SECTION, I.G.E.: Joint meeting with South Western Section, Institution of Civil Engineers, Bristol, inspection of Stapleton Road works, 11 a.m.; meeting 2.30 p.m.; paper, 'Erection of Reinforced Concrete Tank for 6 mill. cu.ft. all-welded Gasholder,' Eales and Turner, of A. Monk & Co., Warrington.

Dec. 2.—SOUTH WESTERN G.C.C.: 34, Bridge Street, Taunton, 11 a.m.

Dec. 3.—BRITISH GAS STAFF ASSOCIATION: 'Unity for Gas Staffs' meeting, Crown Hotel, Hill Street, Birmingham.

Dec. 4.—LONDON JUNIORS: Annual Reception and Dance, Caxton Hall, St. James's Park.

Dec. 5.—SCOTTISH JUNIORS: Joint meeting of Eastern and Western Districts, 'Coke Preparation and the Gas Engineer,' H. S. Hughes, Scottish Gas Board, at Edinburgh.

Dec. 7.—WEST MIDLANDS G.C.C.: Dudley Room, Queen's Hotel, Birmingham, 2.15 p.m.

Dec. 7-11.—SMITHFIELD SHOW, Earls Court. Gas Council exhibit.

Dec. 9.—LONDON JUNIORS: Visit to Hackbridge & Hewittic Electric Co., Walton-on-Thames.

Dec. 9.—MANCHESTER JUNIORS: Visit to A. V. Roe & Co., Ltd., Aircraft Works; 'Industrial Gas,' J. Palmer (Liverpool).

Dec. 10.—EASTERN JUNIORS: Visit to works of Dewrance & Co., Ltd., London.

Dec. 11.—BRITISH GAS STAFF ASSOCIATION: 'Unity for Gas Staffs' meeting, Kent Hall, St. Andrews Halls, Glasgow.

Dec. 12.—WALES AND MON. JUNIORS: 'The Mechanical Side of the Gas Industry,' L. Starr, Wales Gas Board Headquarters, Cardiff.

Dec. 15.—MIDLAND JUNIORS: 'Methods for the Determination of the Accuracy of Gas Metering,' A. E. Mason (Birmingham); Staff Mess Room, Council House, Birmingham, 6.30 p.m.

Dec. 17.—WALES JUNIORS (North): Tour of works of John Summers, Ltd., Shotton.

Dec. 18.—LONDON JUNIORS: 'Coke and the Future,' F. S. Evans, Coke Manager, South Eastern Gas Board; 178, Edgware Road, 6.30 p.m.

Low Pressure Fully-Aerated Burner

DEVELOPMENT OF THIS EQUIPMENT IN GERMANY IS DESCRIBED BY

LESLIE T. MINCHIN,
B.Sc., M.Inst.Gas E., M.Inst.F.

THE entrainment of air by a gas jet is so important a process that one might expect it to have been studied with enormous care. In fact, although this mechanism is the basis of burners being used in about 12 mill. homes today (in this country alone) and in a great many factories and restaurants, the precise nature of air entrainment awaits elucidation. And, due to the sad demise of the Gas Research Board, there seems no immediate prospect of the work being done.

However, enough is known of the process to make it clear that a number of ideas widely held today are fallacious. For example, it is often said that air is drawn in because of the suction produced by the venturi of the burner—in spite of the fact that one can obtain quite good air entrainment in a piece of plain parallel-bore tubing. Another fallacy—particularly appropriate to the subject of this article—is that low-pressure gas does not have enough energy to entrain all the air required for combustion. To do that, it is often said, one must have either high-pressure gas or a forced draught of air.

If one considers the mechanism by which air is entrained, it becomes obvious at once that this cannot be the case. If a small jet of gas escapes into the air of a room, a very high air-gas ratio—perhaps of a million to one—is soon achieved, even though the gas pressure is quite low. Similarly, one can easily make a burner which will produce an air-gas ratio of 5:1 or even 10:1 using low pressure gas. It is only necessary to lower the resistance of the burner sufficiently and one can get as high a ratio as one wants. It is true, however, that one cannot then make it burn with a stable flame unless special precautions are taken to prevent the flame striking-back to the injector.

The fact is, of course, that a fully-aerated air-gas stream from a low-pressure injector does not normally emerge into the air at sufficiently high a velocity to keep the flame on the burner head. If one lowers the resistance of a burner to get an extra high air-gas ratio, one must necessarily use a larger burner-port area than is usually employed. This means that the air-gas mixture comes out at an abnormally low velocity—and, moreover, the speed of flame propagation in this mixture is particularly high. Therefore, for both reasons, the flame immediately runs back to the injector. Only by using high pressure air or gas has it been possible in the past to get a sufficiently high efflux velocity to ensure a stable flame at a high aeration.

The Schwank Burner

During the last seven or eight years a German inventor, Gunther Schwank, has evolved a method of making a low-resistance, high-aeration, low pressure burner which will not light-back. It is possible, of course, to construct a fully-aerated burner which will operate at 6:1 or 8:1 by using a perforated metal plate. Indeed, the present author has published data on the size of hole and spacing of hole necessary to prevent lighting-back in such a burner ('GAS JOURNAL,' **226**, 925 (1939); **248**, 277 (1946)). However, the difficulty of this type of construction is that the flame is only stable so long as the perforated plate keeps relatively cool. There is always a certain critical pressure at which the blue carpet of flame will retire into the holes of the metal, heat the plate to white heat, so that the inside surface inflames the air-gas mixture and lighting-back occurs.

Schwank has succeeded in overcoming this difficulty, and has produced a practical and stable burner, by the use of a special low-conductivity refractory which is pierced with a large number of fine holes. The thermal conductivity of this material is so low that the inside surface is never raised to the ignition temperature of the gas, unless the burner is grossly overloaded. Indeed, the tendency for the surface to heat up is utilised, for a highly incandescent radiator is obtained in this way. The effect is similar to 'surface combustion' except that a multitude of cylindrical holes takes the place of the irregular channels which serve the same purpose in the sintered block. Not only does the new method make it possible to use ordinary low pressure gas supply, without any air blast and consequently without any electrical connection, but it also obviates blocking-up of the pores.

An Ordinary Injection

The net result of this discovery is that one can now obtain a burner, consisting of a rectangular refractory surface which is fed with air-gas mixture by an ordinary injector. On turning on the gas and igniting it, a blue mat of flame appears on the refractory, and soon raises it to about 800°-850°C. The flame is perfectly stable and will burn in this way for as long as it is needed. Because all the air for combustion is pre-mixed with the gas there is no likelihood of one part of the flame being smothered by the other part, and it will burn well in any position.*

Uses of the Burner

One of the first uses to which the Schwank burner was put on the Continent was the heating of large buildings—churches, halls, factories, and so on. The accompanying illustration shows a typical installation in a Hamburg factory—this building is 45 ft. high, and the radiant heaters have been placed—as if they were lamps—30 ft. up and well above the gantry. The reflectors are designed to give something of a flood-lamp type of distribution, so that the heat is conveyed to the working plane economically. Electrical ignition (and preferably a safety cut-off as well) is essential at these high mountings, but this is a problem which seems to have been solved quite successfully.

The application to church-heating seems to have been one of the most successful so far, and close on 200 churches in France and Belgium have adopted this method, and there are several units in the Cathedral at Milan. There are in addition a great many large factories and commercial establishments using the Schwank radiant. It is particularly popular for the outdoor terrace so often to be found in Continental countries. Any traveller to Brussels should visit the Hotel Metropole and see the installation on the terrace there.

High Level Radiant Heating

Though overhead radiant panels are widely used, a word or two needs to be said on the practice of mounting heaters as high as in the installation illustrated. Many people will no doubt ask 'But

* Licenses are being granted to a limited number of firms in the United Kingdom by the British Company, Siaps Gas Radiants, Ltd. Grand Buildings, Trafalgar Square, London. The only licence that has been granted so far is held by the Harris Engineering Co., Ltd.

A typical installation in a Hamburg factory.

isn't that very wasteful?' There seems no reason why this system should not, in fact, be economical, but it is important that the distribution of the heat emitted shall be suitable. Actual tests on the installation illustrated showed results which compared favourably with convection heating. Over a six-month period the average heat input was 115,000 B.Th.U. per hour per °F. temperature difference; the figure for convection heating was 177,000.

The distribution of heat in this building was found to be very good, and the temperature of the reinforced concrete floor was raised so that the workers found it no longer necessary to wear clogs. If the large doors were opened, temperatures were regained in only a few minutes after closing. After the building had been left unheated for 42 hours, less than an hour was needed to warm up. Particularly noteworthy was the fact that the iron parts of the heavy machinery felt warm to the touch.

The Schwank type of burner is valuable for grilling and toasting operations. With this burner an efficiency of about 50% can be obtained. In the catering business, the salamander and restaurant griller afford an obvious field for the application of the burner. In Germany an appliance having the name of 'infra-baby' is popular. This is a griller for the kitchen, which can be turned sideways for use as a room-heater when required. It embodies a half-size burner consuming about 12 cu.ft. per hour, whereas the units shown in the illustration may have 12 or even 18 burners and burn 300 to 450 cu.ft. per hour each at full load.

Other industrial applications will spring to mind, and in fact a wide range of usefulness has already been established on the Continent. For example, the burner is used for drying carpets and building board in factories and for warming newly-hatched chickens on poultry farms. One application of the building industry is of special interest. This is a portable unit mounted on a trolley which can be fed either by bottled L.P. gas or by town gas through a flexible tube.

In this short note I have attempted to outline the principle underlying the new development and to show the importance it is attaining on the Continent.

Schwank Gasgerate G.m.b.H. have, it is understood, made arrangements for the burner to be manufactured in this country.

CRANE Ltd. and the London Juniors

It is true to say that visits are always the more instructive and pleasant when members in parties are small and the hosts' job well-organised. The London and Southern Junior Gas Association visit to Crane Ltd. works at Ipswich was an undoubted success. Twenty-three members were present and were guided round the 40-acre site in groups of four. Another noteworthy feature of the day was the informality; speeches were short, if they could be termed speeches at all.

Crane Ltd. are well known for their gunmetal, cast iron and cast steel valves, domestic boilers, radiators and malleable and bronze pipe fittings; and we were perhaps fortunate to commence the tour where the work starts—namely in the gauge-checking room. This in conjunction with the metallurgical testing department plays an enormous part in the production. Everything is checked in its dimensions, structure and taper threading, and the semi-skilled labour employed is guided throughout by gauge control.

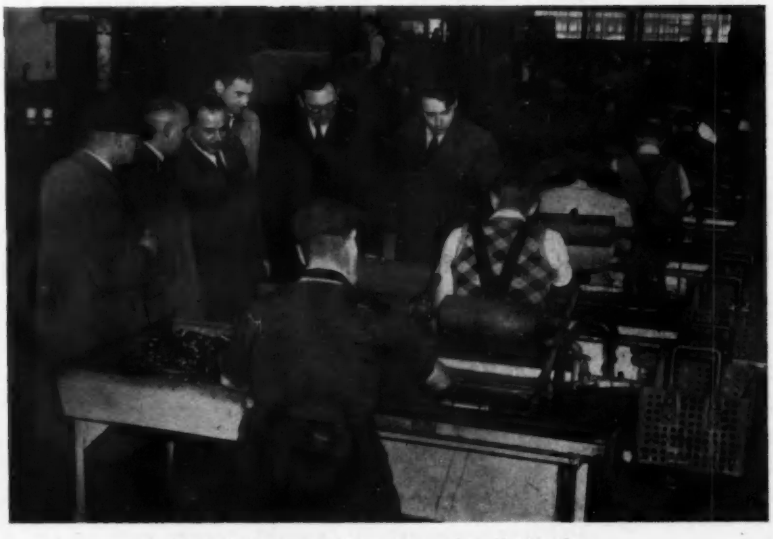
Next came the cast-steel valve shop where we saw many valves of varying capacity from 2 in. to 16 in. both 150 lb. and 300 lb. pressure in the solid wedge gauge valve, 1½ in. to 12 in. 150 lb. and 300 lb. check valves and ¼ in. to 12 in. 600 lb. valves. Here it was interesting to notice all valve stems being threaded and prepared in one operation and the production of gunmetal and cast iron valves. In the foundry we were told that the old foundry technique of taking the metal to the mould was to be rectified with their next big improvement. A fully mechanised mould to metal foundry was to be built.

Domestic boilers and radiators were next on the list and were seen complete from foundry to assembly, including the enamelling shop.

Malleable iron pipe fittings occupied a long time owing to the mass of them and their importance to the gas industry. The speed of production was the outstanding feature. For plugs, back units and caps, which have one thread only, a special machine has been devised having twelve vertical spindles, carrying taps mounted all in a line. Below them is a horizontal drum having five adaptors running round its diameter in line with each of the tapping spindles. These adaptors carry the fittings to be tapped. The drum rotates one-fifth of a revolution per cycle, and while one line of twelve fittings is being tapped, the adjacent line of adaptors is being loaded. Upon completion of the tapping operation the drum turns one-fifth of a revolution carrying the tapped fittings round to the back of the machine where they drop into containers. A girl looks after this machine, which taps 1,800 fittings per hour very comfortably. This is just one machine which maintains the speed and accuracy so essential.

Correct alignment of multi-thread fittings is almost certain when all are tapped at the same operation, but alignment tests are made and a tolerance of one-eighth of an inch in two feet is allowed. Advantage of it is not taken in practice.

The gauging of the thread is important in the making of a pressure joint and a tolerance of 1½ turns is allowed. Male threads are from size to 1½ threads tight, while female are from size to 1½ threads slack. This irons out the tolerance and a consistent joint results.



Individual testing and inspection of malleable fittings.

Searching Tests

Finally the testing. The practice is to test all fittings with 100 lb. air under water. This is a very searching test and virtually eliminates any possibility of a leaking fitting passing through undetected. Having passed the pressure test every fitting is then scrutinised for any defect in casting which might impair its serviceability or appearance. The fittings are then thoroughly cleaned and given a varnish dip to prevent corrosion in stock or transit. To prevent corrosion in service a good many fittings are galvanized. Testing is always done before galvanizing as the zinc would cover any porosity in the metal and prevent detection.

Last but by no means least we saw the bronze foundry where once again production is of the same standard, though not on the same scale.

At lunch Mr. S. C. Best (London Sales Manager, Crane Ltd.) welcomed the the party, and the President, Mr. W. Johnson (South Eastern Gas Board) replied. He thanked them for their kind hospitality and said that their early start from London had already been well justified.

At tea, Mr. E. W. B. Dunning (Watson House), the Senior Vice-President, thanked the guides and the firm for their efforts and Mr. F. Hance (Advertising and Sales Promotion Manager) replied.

Manchester Juniors with Drakes Ltd.

ON THE occasion of the visit of the Manchester District Junior Association of Gas Engineers on November 11, to Drakes Ltd., the well-known Halifax constructional gas engineers, the firm upheld the tradition set by their famous namesake by arranging a unique journey—a railway journey—for their guests. The day's programme included a visit to Queensberry to see the subsidiary works of John Morton (Fireclay) Ltd.; and for the convenience of their guests Messrs. Drakes hired a special train to take them from the works of the parent company at Ovenden to the firebrick works at Queensberry. It is believed to be the first time in local history that a special train has been hired to carry passengers from one private siding to another.

Some of the visitors joined the three coach 'Drakes Special' at Halifax Station, while others who had arrived at the Ovenden works by car boarded it there and were conveyed to the John Morton siding at Queensberry. In the company were Mr. J. Oates, President, Manchester Juniors, Mr. J. A. Drake, J.P., Chairman and Managing Director, Drakes Ltd., Mr. Francis Drake, Managing Director, John Morton Ltd., and Mr. W. F. Raistrick, Joint General Manager, Drakes Ltd. During the short journey to Queensberry refreshments were served.

Members entraining in the 'Drakes Special'

Brontë Country

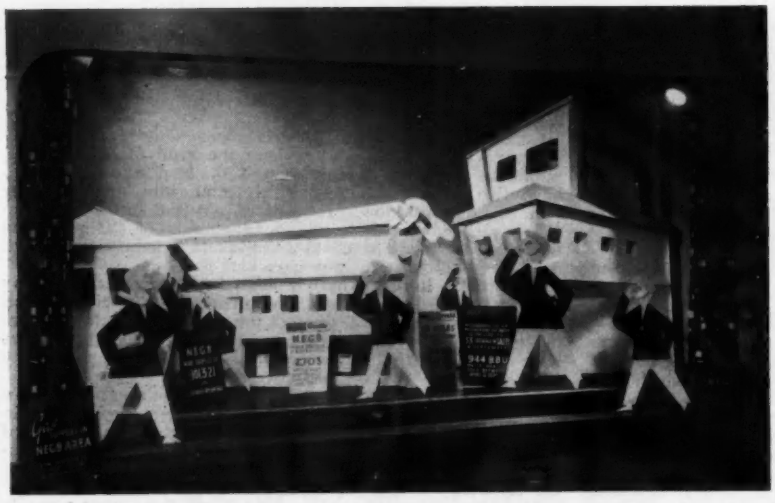
The visitors spent an interesting forenoon at the fireclay works which are situated on a typical Yorkshire hillside directly facing, and less than a mile from, the village of Thornton—the birthplace of those wild moorland spirits, the Brontës. Watching the manufacture of firebricks and refractory specials in the old, but highly efficient works, was an enlightening experience for the visitors; a highlight being a demonstration of the manufacture of horizontal retorts by an ingenious extruding machine, believed to be one of the few which are still in use in the industry.

Returning to Ovenden, the party were entertained at lunch by the Directors of Drakes Ltd. Welcoming the guests, Mr. J. A. Drake said he and his co-Directors were delighted to have the Manchester Juniors visiting them. He was also pleased to see that Mr. A. Cole, President of the Yorkshire Juniors, was with them. They had all taken part in a unique railway journey, which he hoped they had enjoyed. Actually they had hoped to receive some publicity for organising this event, but as it had turned out British Railways had received much more than themselves, judging by the reports in the Press. Continuing, Mr. Drake said he felt sure that visits to contractors served a very useful purpose, because they enabled the firm's personnel to meet representatives of the gas industry to discuss each other's problems. As a firm, they were rather proud of the fact that they had their own design department, engineering works complete with foundry, and with their own refractory works.

The afternoon was devoted to a tour of the Ovenden works where the visitors inspected the many specialised processes which go to the making of Drakes' carbonising plants. The members were impressed with the size of the engineering works, and with the large production shops, which cover an area of some 112,399 sq. ft. Every department was visited, and the visitors concluded their tour conscious of the fact that this century-old firm had every reason to feel proud of its progress and achievement. They realised, too, that unlike many trading concerns Drakes Ltd. have a long family tradition—the sort that jealously guards those old fashioned virtues of diligence, thoroughness, and good craftsmanship.

After tea, which was served in the canteen, a vote of thanks to the Directors was moved on behalf of the Association by Mr. W. Hainsworth.

PAPER SCULPTURE



The Central Publicity Department of the North Eastern Gas Board has been busy recently. Our photograph is of an effective display in the entrance vestibule of the Board's head office. Carried out in a simple form of paper sculpture, it appeared the day after the publication of the Board's annual report, and was used to depict some of the points in it.

The Ministry of Works has issued a new advisory leaflet (No. 34) entitled *House Insulation* (H.M. Stationery Office, 3d., or rates for bulk supply). The leaflet is introduced as giving 'simple aids to warmer houses' and explains methods of thermal insulation which can be used in houses to increase comfort. Various types of insulating materials are described with illustrated notes on how to instal them. Examples are given of materials which can be used for insulating top floor ceilings of existing houses. The Ministry's advisory leaflets are designed mainly to give information in simple and practical form to the small builder, clerk of works, foreman and craftsman.

PRODUCTIVITY TEAM IN WALES

THE Wales and Monmouthshire Junior Gas Association discussed the Productivity Team report at a meeting at Llandrindod Wells, at which Mr. Richard Jones (Wales Gas Board headquarters) was inducted as President in succession to Mr. H. Buckley. As at the seniors' meeting, the report was introduced by Mr. E. M. Edwards (Member of the Wales Gas Board) and Mr. A. G. Higgins (Assistant Secretary of the Institution). Mr. J. T. Haynes, President of the Institution, attended.

Mr. Richard Jones (President) in opening the discussion, said the American outlook on appliance sales was different from ours. The appliances, however, were not as robust and were not expected to last over 10 years. He felt that manufacturers owed their success to manufacturing up-to-date appliances designed for a comparatively short life. He asked whether this was a good policy or whether the British policy of a more robust type of appliance was wiser.

Mr. A. G. Higgins felt the question was tied up with the American way of life and outlook of life. Their standard of life was higher and it was a way of life that all things were constantly changing. In this country he would not for his own part advocate a change in the more robust cooker as it would not fit in with the British way of life and outlook.

Mr. J. Powdrill (Cardiff) said that he felt discussions on such a subject would promote enthusiasm in the industry. He criticised the American policy in that the cookers produced deteriorated very quickly, whereas for a slightly increased cost a better cooker could be produced. He, personally, did not like the American attitude. He felt there was a prodigal waste of natural resources in America.

Mr. E. M. Edwards said there was a constant movement of population in America and most people moved every two years. They were only now awaking to the fact that their natural resources must be conserved. The waste of natural resources had been terrific, but restrictions were now being applied. Transmission companies would lay pipes to sell the gas to the receiving end and would want a minimum charge and as a consequence inserted 'a take or pay for clause.' If the distribution company did not take the gas they had to pay for something in the region of 60 to 80% of gas they had contracted to take.

Mr. J. F. Rust (Newport) asked the fuel cost to an average worker expressed as a percentage of his earnings. He felt that in this country if a consumer bought an appliance he would budget for it and often used less gas while he was paying for it.

The Hire-Purchase Habit

Mr. Higgins said that since the advent of natural gas, gas was by far the cheapest fuel. Most householders allocated a fixed sum per week to hire-purchase and most appliances in America were bought through hire-purchase. As soon as the payments were completed on one article the householder would look around for something else to buy.

Mr. C. G. Reeve (Wales Gas Board) said he understood that the American requirements regarding H_2S in the gas were not as strict as ours, but that total sulphur was considered very important. He felt that this was wise. He also understood their spent oxide was always dumped and wondered if this was because there was no sale for the material.

Mr. Edwards said natural gas was usually sulphur free so that the outlook in the States was different and was concerned with the total rather than particular forms of sulphur. He agreed that this was a right attitude. Because of the low or nil sulphur content of the gas, water heating and whole house heating appliances were now made in steel instead of cast iron. There was no market for the spent oxide.

Mr. Williams (Mold) observed that dealers sold most of the appliances and, as dealers were inclined to sell any commodity, he wondered whether a very low standard of appliance got on the market.

Mr. Higgins pointed out that over 90% of the appliances were tested and had the seal of the A.G.A.

Mr. H. Buckley (Pontypool) noted that coke, which was delivered by the manufacturing companies, was delivered unbagged. He was surprised at this and could hardly imagine the American workman with all his labour saving devices shovelling coke into his fuel store. He noted that it was a common practice to have mains in urban areas with a pressure of 200 lb. per sq. in. and he had always felt that we were too conservative in this respect. He did not feel, however, that we need have pressures as high as this. There was an economic limit to the distance over which gas could be transmitted. He felt that one of the most important things that we could learn from the report was the American worker's adaptability and the way he was mechanically minded. He saw a great need for simple composite mechanical plant in this country, particularly the all purpose plant such as excavators, bulldozers, small cranes and rammers.

Mr. Edwards stated that the coke was delivered to the consumer unbagged, but in the majority of cases was either discharged by chute from the lorry into cellars or tipped into wicker baskets and carried to the consumers' store. He agreed with Mr. Buckley's remarks regarding centralised production and said that the whole position had to be studied closely. As a rough figure he would say that an increase of 6s. per ton of coal in rail haulage charges increased the cost of gas by 0.4d. per therm.

Mr. W. L. Williams (Wales Gas Board) said that it was stated quite emphatically in the report that the American workman did not work any harder than his British counterpart. He felt that this being so, his greater productivity must be due to mechanical aids. He wondered if we could get some of these mechanical aids from British sources. If alternatively they had to be bought from America, there arose the overriding question of dollar expenditure.

Mr. Higgins said that he felt that on the coke ovens the men did work harder, but, on the distribution side, did not work so hard manually, but had mechanical aids to assist them. With regard to the purchase of American mechanical aids he was not in a position to say whether we could buy them.

Mr. T. F. Edwards (Newport) asked how the distribution mains were tested. He wondered whether the use of electrical and other gadgets on the appliances had increased the number of accidents. He was also surprised to see that orifice meters were used for industrial consumers.

Mr. Edwards said that the American policy with long distance high pressure main laying was first to obtain good welders and, in the initial stages, to cut out and test the welds on a number of joints. They gradually reduced the number of tests. The more recent practice was to apply gamma ray tests of joints. If a gas leak were present in mains passing through country areas the surrounding vegetation would, of course, become brown. Automatic valves were fitted on long transmission lines and if the flow increased and the pressure fell, due to a serious break, the valve would automatically shut off. With regard to the local distribution system they had methods of testing similar to ours, but they had regular testing surveys. All manholes were tested monthly, using instruments such as the M.S.A. explosimeter. They also used a probing bar very considerably. We had something to learn from the Americans in their quick and regular detection methods and, while the overall unaccounted for gas in Wales had shown some reduction, there was still scope for improvement.

Mr. Higgins said he did not know of any case where an orifice meter was used for domestic purposes but, when it was considered that some of the industrial consumers were taking over 50 mill. cu.ft. per day, it was apparent that this could not be metered by anything but the orifice meter if the cost were to be kept reasonable. They made sure that the maximum flow did not exceed the minimum flow by the ratio of more than 4 to 1 so that the meters were used mainly on reasonably steady industrial supplies. He did not know of any accidents due to the gadgets frequently fitted.

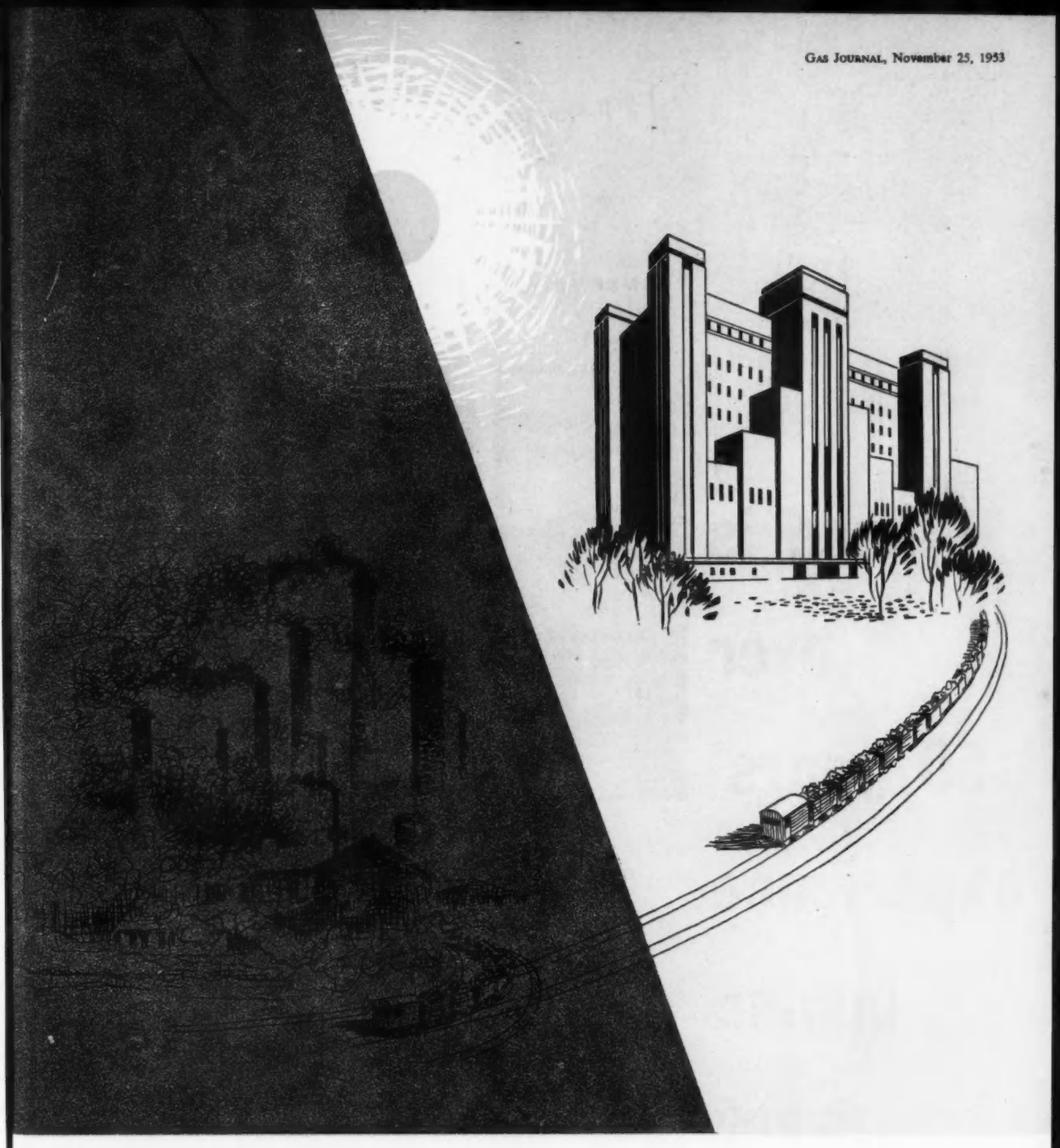
Mr. Edwards said that two orifice meters had been installed in stations in Wales on the grid supply and results to date appeared to be promising. Where the ratio of maximum to minimum flow was greater than 4 to 1, it was possible to have two or three meters which came into operation for various ranges of flow. He pointed out that as there was no CO in natural gas there was no possibility of CO poisoning other than that formed by incomplete combustion though death by asphyxiation was possible.

Mr. C. W. Butler (Rhyl) wondered whether there was any competition between the departments of the combination utilities. He also asked whether the same manufacturers were making both gas and electrical appliances. He felt that we were ahead of the American gas industry with the safety seals which we had on our governors.

Mr. Edwards said that the degree of competition within combination utilities varied, but it was not present as we knew it. He quoted an instance where only an eighth to a tenth of the consumers were supplied with gas because the combination company felt it would get higher profits by only supplying electricity to developing areas.

Mr. Higgins stated that in New York there were separate departments and he thought the competition was keen. He did not know of any manufacturers making gas and electrical appliances.

A vote of thanks to Mr. Edwards and Mr. Higgins was proposed by **Mr. S. Armitage.**



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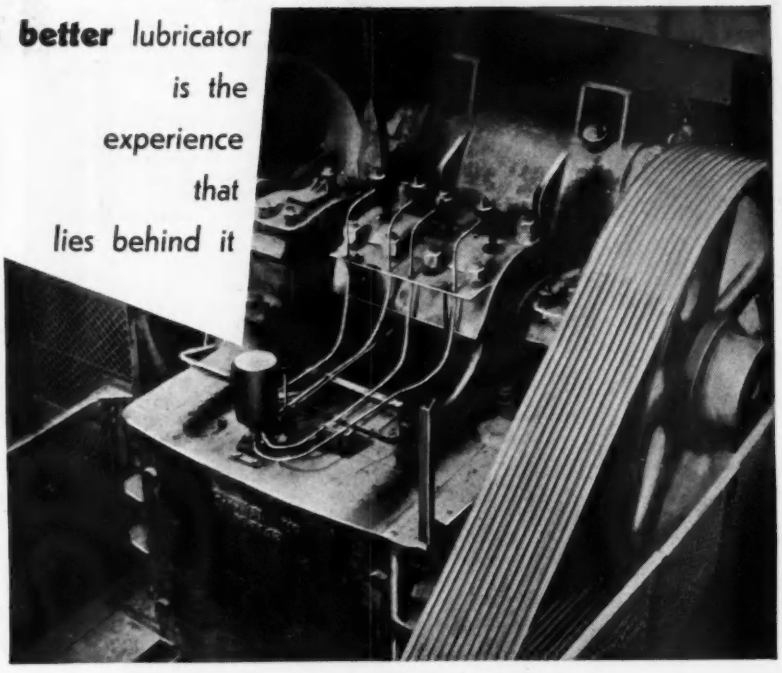

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Gas in France

By '*Ashton*'

(*Concluded from Nov. 18, p. 460*)

THE September issue of the French Journal carried a report of M. Kec's Presidential Address to the A.T.G., excerpts from which we have already published. The address showed considerable originality, at least in approach along some lines not in themselves new. That passage of the address which dealt with distribution will perhaps be of most interest to English readers.

Distribution Practice

He pointed out that the standard depth of mains laid in streets and roadways was fixed in the days of water-bound road surfaces and steel-tyred vehicles. In future a less cover could be justified under modern road surfaces and by the modern pneumatic tyre. He suggested that in new layouts consideration might be given to laying mains with much less cover, in protective troughs, in some cases at ground level, and in some small reticulations in rural or semi-rural districts distribution might be effected in pipes of small diameter slung overhead like electric cables.

On the subject of the materials used in the construction of gas mains, cast-iron had the defect of weakness at the joints. Steel with welded joints was an improvement. It could be protected by the new cathodic techniques from most forms of external corrosion, but it lacked flexibility, particularly when laid at depth. There remains internal corrosion.

'We must not overlook the fact that we are at the dawn of an era of plastic materials and perhaps we may hope to be able to select, among the impressive series of these materials, some which would resist internal pressure, with a sufficient mechanical strength and flexibility, capable of construction by re-heat without the incorporation of other materials, resistant to attack by the constituents of gas and external agents, and not giving rise to any internal deposits likely to be carried in the form of dust.'

But the most interesting feature of this very brilliant and thought-provoking address was its advocacy of at least a re-examination of the proposal to distribute gas at much higher pressures than those now in use with governors at each block of buildings or even to each consumer's meter. We have already abstracted this portion of the address.

New Gasworks at Nice

During the period of the Congress, members of the A.T.G. visited the gasworks at Nice on June 18 and 19. It is about 100 years since the first Nice gasworks was erected on a site near the present Avenue des Diables Bleus. Successive reconstructions and extensions of this works were pursued until 1931 when the Ste du Gaz et de l'Electricité de Nice (the combination should be noted) purchased new ground upon which to erect the new installations necessitated by the constantly growing demand for gas. Under the direction of M. G. Combet the new works was designed by M. J. Lafitte, as architect, M. Viénot, a former President of the A.T.G., and M. Peirani, Engineer to the Company.

One of the principal difficulties encountered in the construction of the works was the problem of the foundations. The sub-strata consist of alluvial deposits incapable of supporting heavy loads without reinforcement. According to the type of the structures, different methods were adopted. For the very heavy loads admitting of no settlement, such as those of the retort benches, foundations on ferro-concrete piles moulded *in situ* and resting on a bed of gravel at a depth of about 40 m. (say 130 ft.) were used. For heavy structures where a limited settlement might be permitted the foundations were 'floating caissons.' Gasholders were constructed in tanks of reinforced concrete at such a depth that the difference between the weight of earth and water equalled the load imposed by the structures. Foundations spread at the surface were used for buildings with loads less concentrated.

To obviate the emission of dust and fumes, in response to the legitimate wishes of the Municipality, the retort house was equipped with Glover-West continuous verticals. It now consists of three benches of four settings each with eight retorts of four tonnes daily capacity. Each bench possesses its own chimney with secondary air recuperation and a waste heat boiler. The production of gas at 4,200 kcal. per cu. m. (440 B.Th.U. per cu.ft.) may vary from 36,000 to 55,000 cu. m. per 24 hours (1,270,000 to 1,942,000 cu.ft.) per bench corresponding to the carbonisation of 60 to 120 tonnes of coal.

The settings are heated by gas generated in a centralised installation of four Marischka producers each gasifying 20 tonnes per 24 hours using small coke and each producing 85,000 cu. m. per 24 hours (3 mill. cu.ft.) of gas at 1,250 kcal. per cu. m. (130 B.Th.U. per cu.ft.). The production of steam in the water jackets is about 20 tonnes per 24 hours each.

For peak loads, the water gas plant installed in 1926-31 is still in service. It consists of two sets of the Humphreys & Glasgow type with manual clinkering but automatic control of the cycle. This is to be replaced by two sets (of which one is under construction) of the same type but of the most modern design with completely automatic operation and with a capacity increased to 50,000 cu. m. per 24 hours (1¾ mill. cu.ft.), each, of gas carburetted to 4,200 kcal. (125 B.Th.U.).

Ancillary plant follows classical lines. Storage is in two gasholders of 40,000 and 60,000 cu. m. (1,400,000 and 2,120,000 cu.ft.) capacity; a further holder of 1,500 cu. m. (53,000 cu.ft.) capacity is under construction for the storage of water gas.

French Power Resources

Mr. J. Couture, of the French coal industry (Charbonnages de France) presented a paper on November 5 to the Institute of Fuel in London. The production of petroleum in Metropolitan France although not inconsiderable amounts to only 2% of the consumption and importation rose to 22 mill. metric tons of refined products in 1952. On the other hand a large refining industry has been established of which the present annual capacity is 25 mill. tons. There is one deposit of natural gas, at St. Marcel, producing annually 300 mill. cu. m. (1,000 mill cu.ft.).

French coalfields in 1952 produced 57.5 mill. tons of coal and 18.5 mill. tons were imported. Most of the fields are old with limited reserves approaching exhaustion. Only Lorraine coalfield is in full production. With this new deposit, estimated French reserves amount to only 0.2% of world resources. Coal was first produced in the Lorraine field in 1900 when it was in German hands. It produced 12 mill. tons in 1952. The seams are thick and the coal is very hard, calling for intensive mechanisation. Volatile content is 35% or more. Future development is directed towards the production of coke, with gas as a by-product, for use by the iron and steel industry situated in the neighbouring iron-ore area.

Cerchar (Research Department of the National Coal Industry) is doing intensive work in this field in the washing and cleaning of this coal and in blending for coke production. An interesting phase of this is the utilisation of fines in the manufacture of patent fuels of which the total production in France was 6 mill. tons in 1952 or about 10% of the net production of coal. A popular variety of this is 'boulets,' ovoid briquettes of single-nut size mixed with cleaner products so that the ash content is not too high. Slurry from the washeries is being dried, mixed with pulverised middlings and used in pulverised-fuel boilers in power houses at the pit head. By 1960 it is expected that these power stations will generate 12,000 mill. kilowatts of which 4,500 mill. will be used by the mines leaving 7,500 mill. to be sold to the grid.

Coventry

THE DEVELOPMENT OF FOLESHILL GASWORKS

TODAY the further extensions of the Foleshill Gasworks of the West Midlands Gas Board were officially inaugurated by the Lord Mayor of Coventry, Alderman H. B. W. Cresswell, who, in the presence of a distinguished gathering, unveiled a plaque to commemorate the event.

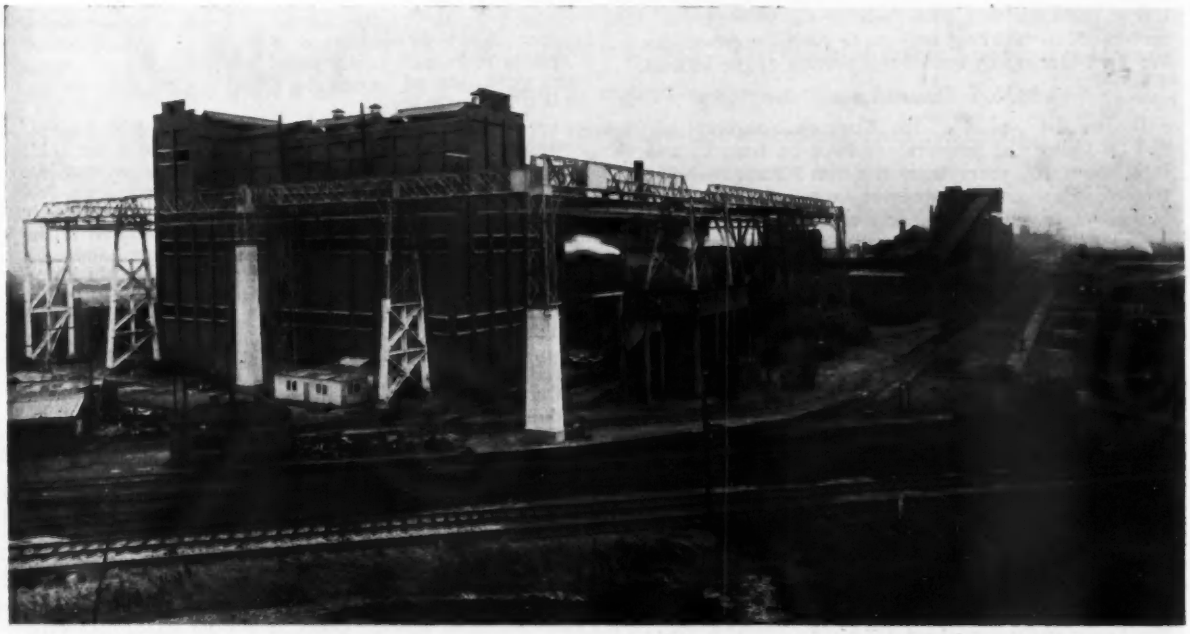
The first section of carbonising plant at Foleshill came into operation in 1909 when gas sales in Coventry stood at 800 mill. cu.ft. per annum. During the first world war demand rose rapidly to 1,800 mill., a demand which was met by the extension of the original horizontal plant to four benches each of eight retorts 22 in. x 16 in. x 20 ft. through, operated by Fiddes-Aldridge stoking machines. Immediately after the war schemes were prepared for an installation of continuous vertical retorts, and in 1923, Section A, consisting of 72 Glover-West retorts 33 in. x 10 in. x 20 ft. 6 in. long, came into operation with extensive coal and coke handling plant. Waste heat was recovered in natural draught vertical water-tube boilers, one to each of the nine settings, but these were replaced in 1936 by two Spencer-Bonecourt induced draught fire-tube boilers which raised more than twice as much steam with the same available waste heat. The reinforced-concrete coal store, in tandem with the retort house, is a fine example of its kind which has often been described (see *King's Manual*, Section 5, p. 61). Coke is handled direct from the retort house by an extensive system of telpherage shortly to be replaced by a set of band conveyors. The nominal daily capacity of Section 'A,' located in No. 2 retort house, marked 16 on the Key Plan (p. 529), is 3 mill. cu.ft. of gas.

Section 'B,' marked 17, was built in a duplicate line of retort house, coal store, and gravity bucket conveyor in 1927, in one bench of 40 Glover-West retorts, 40 in. x 10 in. x 25 ft. long, with a daily gas-making capacity of 3 mill. cu.ft. The line was completed in 1939 by the construction of Section 'C' with 32 retorts of similar dimensions but in settings of the balanced-heating design, and a daily capacity of 2½ mill cu.ft. Waste heat from Sections 'B' and 'C' is recovered in three Spencer-Bonecourt boilers.

The total daily vertical retort gas-making capacity was thus 8½ mill. cu.ft., but sales in 1939 had risen to above 3,000 mill. cu.ft., and with the expansion of armaments (which included many types of motorised vehicles) it was necessary to proceed immediately with a further extension. A scheme was prepared for the installation of two large carbonising sections at the point marked 2 on the Key Plan on the site occupied by one of the horizontal retort benches which was dismantled.

1939-1953

The first instalment of this scheme was Section 'D,' built under the difficult war time conditions of 1940-41. It contains seven settings, 56 Glover-West vertical retorts of the larger section, 50 in. x 10 in. x 25 ft. long, and is heated on the balanced-heating system. It has a daily gas-making capacity of 5 mill. cu.ft. Waste heat is recovered in two Spencer-Bonecourt boilers. Coke is taken from beneath the retort bench in a band conveyor, elevated in lip-bucket conveyors arranged across the retort house at the point between Section 'D' and the proposed future Section 'E,' and conveyed to coke bunkers placed in line but at a sufficient distance to allow for the installation of the future retort bench. In subsequent planning it was decided that there should be two Sections, 'E' and 'F,'



GENERAL VIEW OF WORKS, WITH NO. 3 RETORT HOUSE (SECTIONS G, H, AND J) IN FOREGROUND

each of four settings, in line with Section 'D,' and that with these sections the new waste-heat gas turbine should be incorporated.

This, however, necessitated lengthy designs and consideration, and in the meantime it was decided to build Sections 'G,' 'H' and 'J' in No. 3 retort house at the point marked 74 on the Key Plan. This retort house is a replica of that which is in course of construction at the Etruria gasworks in the North Staffordshire Division of the area, so that detail drawings were available. The project was sanctioned by the Board in the autumn of 1950. 'H' and 'J' Sections were put into commission in January, 1953, and 'G' section in July, 1953. The total daily gas-making capacity is 6.75 mill. cu.ft.

The sections form a complete carbonising unit built in one retort house and in three independent benches so that each can be let down for repairs or reconstruction in turn. This arrangement is in accordance with modern practice, obviating the disadvantages of a large number of retorts in one bench, part of which cannot be let down without distortion of brickwork.

Each bench contains twenty-four 50 in. by 10 in. by 25 ft. Glover-West continuous vertical retorts in settings of eight, each setting equipped with its own integral, pressurized step-grate producer.

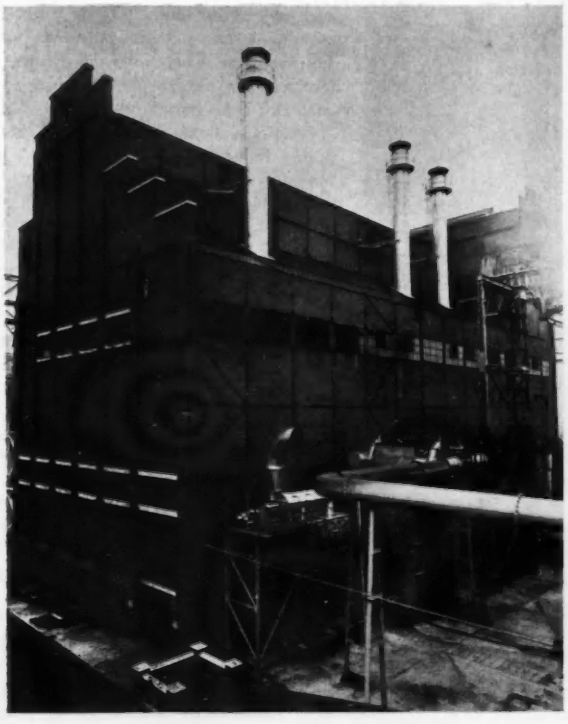
Balanced Heating

The heating system of the settings is on the balanced-heating principle. The term 'balanced' emphasises the characteristic feature of the system in which producer gas is admitted to the combustion chambers equally from both sides of the setting. The products of combustion travel towards the centre of the setting. The necessity for supplementary (tertiary) air is limited and the retorts are heated by the more effective primary combustion. Advantage is thus taken of the well-known fact that a very high proportion of the energy generated by the oxidation of fuel gases is liberated at the point of combustion and at a very much greater rate than in secondary combustion,

THE NEW 500-TON COKE STORAGE BUNKERS WITH SCREENING PLANT ABOVE

where additional air is added to extend oxidation over longer distances but with an inevitable diluent effect.

A further advantage of 'balanced-heating' is that the setting is symmetrical about its centre so that the outer walls are of the same weight and thickness. Horizontal movement of the refractories due to expansion is therefore equalised about the centre of setting. Expansion is kept constantly under control by means of spring plates placed between the retort bench bracing and the brickwork. The system also provides for the residual heat of the coke to be transferred to the incoming secondary air. The combustion chambers are enclosed by walls in which producer gas and secondary air uptakes are located. The setting is thus insulated in a particularly effective manner. Heat is recovered in the upper passes of the setting by transfer to the incoming charge. Finally, the waste gases are passed to waste-heat boilers for steam raising.



NO. 3 RETORT HOUSE. WITH CONDENSERS, HOT-GAS DETARRERS, AND DUST EXTRACTION COLLECTOR IN FOREGROUND

Ancillary Retort House Plant

The waste-heat recovery plant consists of two Spencer-Bonecourt horizontal induced draught boilers each capable of dealing with the gases from two of the three benches. The boilers are 8 ft. in diameter, 15 ft. 6 in. long over the tube-plates, with a heating surface of 3,200 sq. ft. and a steam raising capacity of about 11,000 lb. per hour at a pressure of 12 lb. per sq. in. superheated 50°F. The induced-draught fans designed for an overload capacity of 20% are driven by 44 H.P. totally-enclosed 'Corcooled' gasworks type electric motors. There are four Weir feed-water steam-driven pumps the exhaust from which is passed through two Weir feed-water heaters Steam to the retorts is controlled by a reducing valve with West-Taylor valves controlling the supply to each retort.

Hot crude gas coming from each retort is immediately washed and cooled by passing through a continuous spray of warm liquor. The liquor is collected in a sealed main, one to each group of four retorts, from which it is led away to a separating tank within the retort house, where tar settles out and whence the warm liquor is pumped back to the sprays. Coke extractors are of the helical worm type driven by worm and ratchet gear

from reciprocating bars actuated by electric motor or vertical steam engine, each as a standby to the other.

The retort house is equipped with a fully automatic lift, push-button controlled, with platforms at all working levels, vacuum cleaning plant, and Drummond dust extraction plant applied to the coke discharge. The plant is fully equipped with indicating and recording pressure and temperature instruments. Producer fuel is recorded by an Avery automatic weigher and totaliser.

Coal Handling

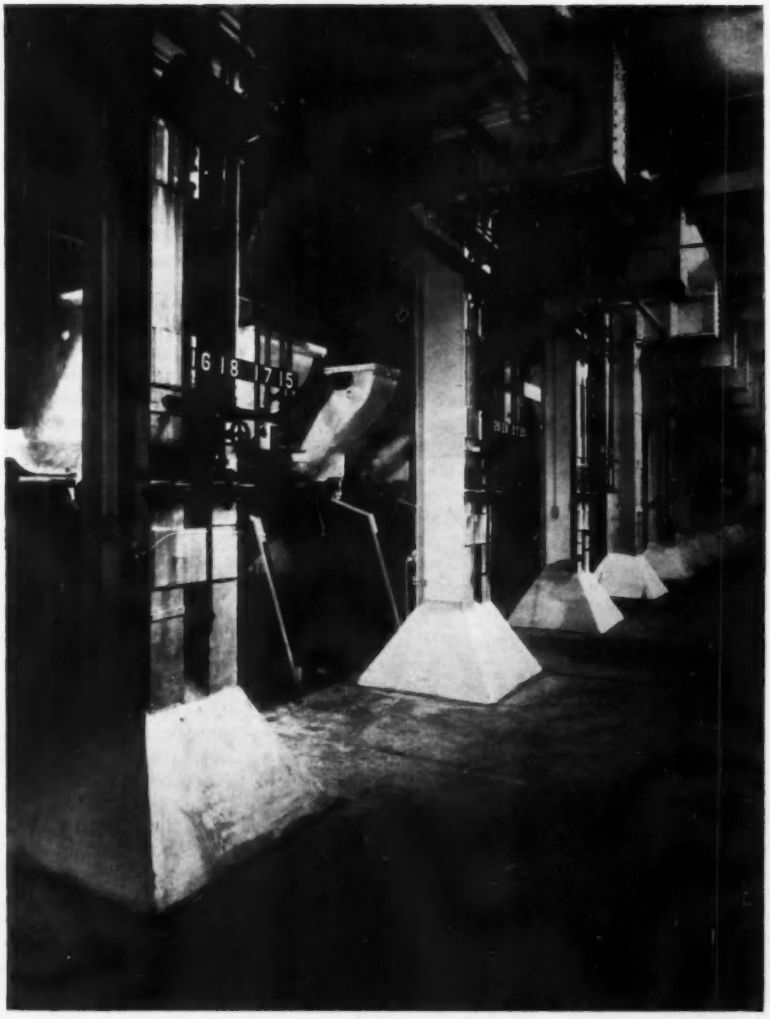
Coal for No. 3 retort house is discharged from railway wagons at a point north-east of the house by a Mitchell side-tippler delivering it to a receiving hopper of 21 tons capacity below ground. The tippler, which is capable of handling the general run of main-line coal wagons ranging between 10 and 21 tons capacity (32½ tons gross maximum weight), is housed in a steel-framed brick building. The tippler is fitted with a weighbridge. It is capable of discharging 15 wagons per hour. Coal from the receiving hopper is fed at the rate of 90 tons per hour by a reciprocating tray feeder through a single roll coal breaker of similar capacity to a 30-in. troughed band conveyor in a reinforced concrete subway to duplicate lip-bucket conveyors arranged across the end bay of the retort house. These deliver coal to either of two 42-in. flat band conveyors with ploughs feeding and distributing coal in the 48-hour capacity coal storage bunkers suspended above the retort benches.

Coke discharged from the bottom chambers of the retorts is fed by way of a travelling coke chute to either of two 30-in. troughed band conveyors running below floor level. These conveyors are reversible and arranged to deliver to the cross lip-bucket conveyors for elevation to producer and retort feed hoppers or to a 30-in. inclined troughed band conveyor transporting coke to a receiving hopper at the end of Section A where it connects with the general system. From this point coke is taken mainly to a new battery of 500-ton overhead storage bunkers constructed in steel-framing, brick-filled.

Coke Grading and Other Plant

Above the coke bunkers is arranged a system of coke grading plant which is also similar to that designed for the Etruria works. It consists of two lines of plant each of one double-deck Pegson vibrating screen and one single deck screen of the same type with inter-connecting conveyor. Each line is capable of dealing with 40 tons of run-of-retort coke per hour.

The primary double deck screens are of the Pegson-Telsmith design, 12 ft. by 4 ft. They separate the coke into the three sizes —over 1¾ in., through 1¾ in. and over 1¼ in. and through 1¼ in. The secondary screens are also of the Pegson-Telsmith heavy-duty type; they are built with one deck to separate coke into the two further sizes, through 1¼ in. and over ¾ in., and through ¾ in. The bunkers are provided with six outlet chutes with fixed Pegson vibrating de-breezing screens delivering to railway wagons and six outlets to a travelling open-deck Pegson vibrating screen with automatic weigher and bagger. Room is left to duplicate the whole of this plant on the same lines on an adjacent site to the south-east.



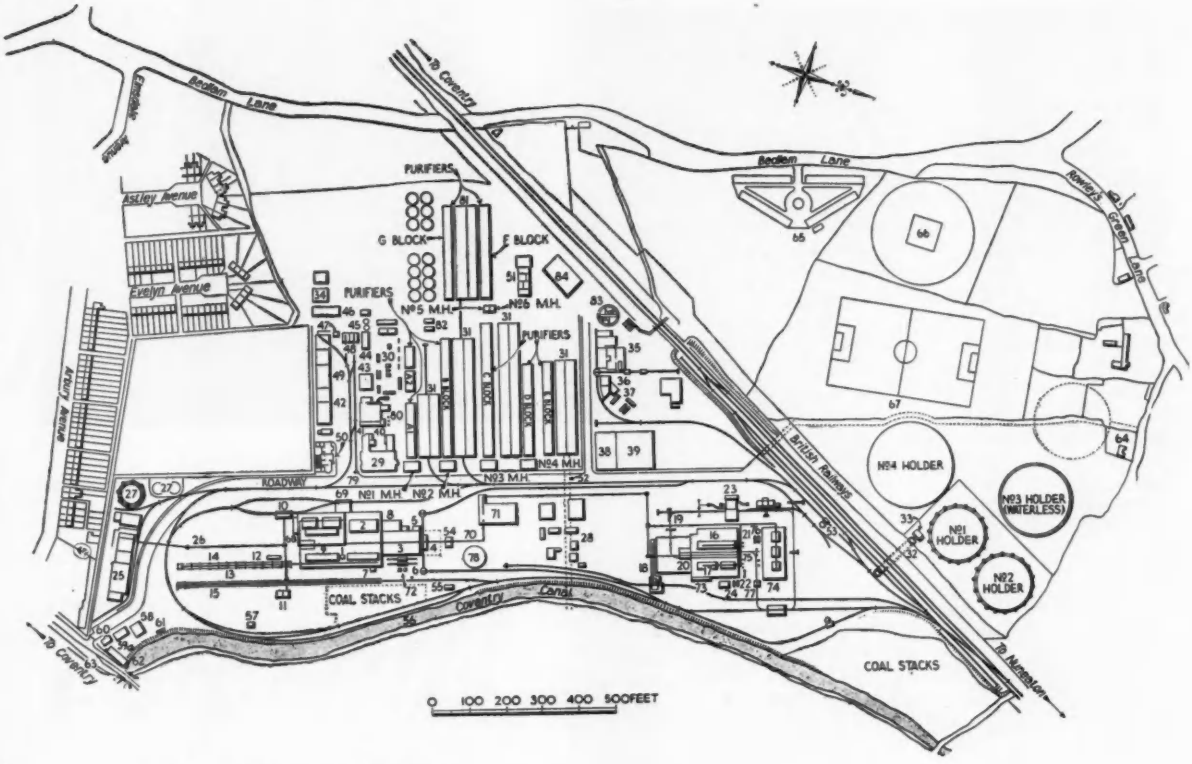
INTERIOR VIEW OF NO. 3 RETORT HOUSE

All the foundation work and other concrete and ferro-concrete work were carried out by West's Piling and Construction Co. to the designs of West's Gas Improvement Company, the main contractors for the carbonisation and the coal and coke handling plant.

Foul gas from No. 3 retort house passes immediately to two 'Elex' type hot-gas electrical tar precipitators by W. C. Holmes & Co., Ltd., each with a daily capacity of 3½ mill. cu.ft. reduced to N.T.P. The electrical equipment is housed in a separate brick building at the point marked 75 on the Key Plan adjacent to the detarrers and consists of a selenium iron static rectifier, a transformer, condensers, and a control panel for each detarrer.

Steam is circulated through the detarrer supporting insulator to prevent the formation of condensate on the insulator body. The effluent from the detarrers flows to a 48-in. seal pot and then by gravity main to the chemical works. The pressure drop through the detarrers when operating at maximum throughput is ⅛ in. to ¼ in. W.G.

Following the hot-gas detarrers, the gas passes through two Holmes vertical water-tube condensers constructed in mild steel (at point 76). Each condenser has a cooling surface of 6,000 sq. ft. and is capable of dealing with 3½ mill.cu.ft. of gas per day.



GENERAL PLAN OF FOLESHILL WORKS
OF THE WEST MIDLANDS GAS BOARD

Key Reference to Plan

1, No. 1 retort house, horizontal;
2, No. 1 retort house, vertical, 'D' section;
3, coal stores;
4, coal unloading and breaking;
5, coal breaker engine house;
6, atmospheric condensers;
7, retort house foreman's office;
8, stokers' mess room, etc.
9, engine room;
10, No. 1 coke plant;
11, coke breeze washing plant;
12, coke screening plants;
13, gantry for coke tipping;
14, coke yard;
15, sunk dock for loading coke;
16, No. 2 retort house, vertical, 'A' section;
17, No. 2 retort house, vertical, 'B' and 'C' section;
18, coal conveyor and gantry;
19, telpher crane system;
20, telpher rest house, men's mess room under;
21, water cooled condensers, 'A' section;
22, Water cooled condensers, 'B' and 'C' section;
23, coke screening plants;
24, liquor cooling plant;
25, C.W.G. plants;
26, coke conveyor to C.W.G. plant and boilers;
27, relief gasholder and oil tanks;
28, benzole plant;
29, exhauster house and electric and hydraulic power houses;
30, washing and scrubbing plant;
31, oxide sheds;
32, subway for gas mains;
33, gasholder valve house;
34, diesel engine driven gas compressors;
35, chemical works and automatic liquor concentration;
36, surface and waste water filter beds;
37, tar dehydrating plant, store and loading tanks;
38, underground tar and liquor storage tanks;
39, tar and liquor pump house and overhead loading tanks;
40, hydraulic accumulator;
41, boiler feed water heater;
42, boiler and pump houses;
43, underground liquor churning tank;
44, water tower;
45, water softening plant;
46, building stores;
47, works water well and borehole;
48, locomotive engine sheds;
49, workshops and stores;
50, offices, laboratory, and coal testing plant;
51, fire and ambulance station;
52, culvert to stream;
53, sidings, weighbridge, and offices;
54, auxiliary exhauster house;
55, canal water pumps;
56, wharf for canal boats;
57, auxiliary booster house;
58, gas boosting house;
59, H.P. compressor house;
60, cart weighbridge and office;
61, pay office;
62, workmen's canteen, etc.
63, works main entrance;
64, cottage for holder attendant;
65, hostels;
66, cricket field;
67, football field;
M.H. meter house.

Plant under Construction and Proposed

68, No. 1 retort house, vertical, 'E' and 'F' section;
69, coal tippler;
70, coke handling conveyors;
71, coke screening and storing;
72, watercooled condensers, 'E' and 'F' section;
73, waste-heat boilers No. 2 retort house, 'B' and 'C' section;
74, No. 3 retort house, vertical, 'G', 'H', and 'J' section;
75, electrodetarrers (hot gas), 'G', 'H', and 'J' section;
76, water-cooled condensers, 'G', 'H', and 'J' section;
77, liquor pump house;
78, water-cooling tower;
79, turbo-exhausters;
80, electro-detarrers (coal gas);
81, oxide sheds;
82, electric driven compressors;
83, works sedimentation tank;
84, effluent balancing tank.

For the purpose of collecting and re-circulating liquor through the retort house there are four electrically-driven pumps of 5,000 gal. per hour capacity with an overhead cast iron collecting and separating tank of 9,500 gal., in a steel-framed brick-filled building at point 77.

Other plant which has now been put into commission includes: At the point 84 (Key Plan) an effluent liquor settling tank receiving effluent from the liquor concentrating plant in the chemical works and a balancing tank for storing and cooling it before discharge to the sewer. The settling tank has a capacity of 25,000 gal. and the balancing tank 180,000 gal., the latter being divided into two separate compartments to facilitate cooling. Liquor is pumped from this tank to the sewer at a pre-determined rate.

New 6-million Holder

There is a new gasholder, spiral-guided, with a capacity of 6 mill. cu.ft. The contract for this holder was entrusted to Ashmore, Benson, Pease & Co., Ltd., of Stockton-on-Tees. It is designed with four lifts in a steel tank. The outer lift is 232 ft. in diameter by 40 ft. deep and the tank is 233 ft. in diameter by 40 ft. 9 in. deep. The bottom of the tank is made of $\frac{5}{16}$ in. steel plates with an outer ring of $\frac{7}{16}$ in. plates. The bottom curb is of 8 in. x 8 in. x 1 in. angle. The side-plates in eight tiers are graduated in thickness from $1\frac{1}{16}$ in. thick in the bottom tier to $\frac{3}{8}$ in. in the top, and the top curb is of 6 in. x 6 in. x $\frac{1}{2}$ in. angle. Forty-eight twin roller spiral carriages are spaced round the periphery of the tank, engaging with the spiral rails on the outer lift.

The inner lift is constructed with nine parallel rows of side sheets. The top and bottom rows are $\frac{1}{2}$ in. thick, the next rows $\frac{3}{8}$ in., and the intermediate rows 9 B.G. thick. The top and secondary curbs are formed of 6 in. x 6 in. x $\frac{7}{16}$ in. angles. The 48 vertical stays are of 14 in. x 6 in. R.S.J. The crown, with a rise of about 11 ft., is plated radially. The

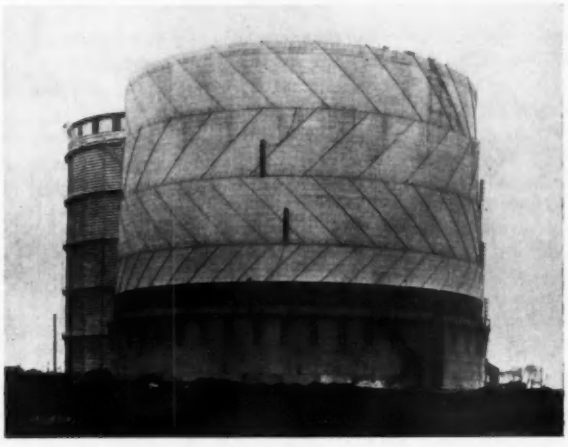
centre plate is ½ in. thick, the outer row ⅜ in. thick, the next two rows are ¼ in., the next ¼ in., and the intermediate rows 8 B.G. The framing is constructed with 24 main rafters of 6 in. x 5 in. joists trussed with angle-struts and flat ties, 24 main tension bars of 6 in. x ¾ in. steel flats bolted to the intermediate vertical stays, and to the ⅝ in. truss plates at the bottom of the centre pipe with turn-buckles for adjustment. The secondary rafters are of 6 in. x 5 in. R.S.J. The centre pipe is 30 in. in diameter of ⅜ in. plate electrically welded. Roof purlins are of steel angles in graduated sections in 18 rows with one row of main purlins of 6 in. x 5 in. R.S.J. The 24 spiral guides are of flat bottom steel rails of special section, 60 lb. per yard. The other lifts are similar in construction except that the top and bottom rows of side plates are $\frac{7}{16}$ in. thick. The holder is fully equipped with platform round the top curb of the tank with access stairway with similar access to each dip, manholes and air pipe in the crown, inlet and outlet pipes, and valves of 30 in. diameter, anti-freezing apparatus and anti-flooding holes. The whole of the steel is to B.S.S. No. 15 with a tensile strength of 28 to 32 tons per sq. in. Foundations for the holder were constructed by F.C. Construction Co., Ltd.

The purifiers serving 'G' block were put into operation in August, 1953. They were manufactured and erected by Clapham Bros., Ltd. The installation consists of five ground-level boxes each 50 ft. long x 30 ft. wide x 6 ft. deep, having a nominal capacity of 3 mill. cu.ft. per day.

A new 30-ton capacity weighbridge of Avery's manufacture, having a 30 ft. x 8 ft. platform, was put into commission in June, 1953. Provision has been made for the installation of a similar platform and recorder at the opposite side of the weigh office to facilitate the simultaneous weighing of incoming and outgoing traffic.

Conversion and addition to the building shown at point 57 on the Key Map provide a messroom and ablution facilities for yard and day workers. This work was completed in November, 1953.

A scheme which was commenced in 1951 and completed in November, 1952, was the transfer of the joinery and woodworking section of the building department from the existing fitting shops to a site adjacent to the chemical works. Existing buildings were modified to house this department and new woodworking machinery was installed. New messroom and ablution facilities have also been provided. Consequent on this move the fitting shops of the electrical and mechanical maintenance departments were reorganised. Much new machinery was provided, and a mechanical and electrical maintenance records section was set up.



THE NEW SPIRAL-GUIDED 6-MILL. CU. FT. HOLDER

[Acknowledgments are made to 'Coke and Gas' for the general works plan, to Messrs. P. W. Thompson, Coventry, for the photograph inside No. 3 retort house, and to Messrs. A. H. Lealand, Coventry, for the other illustrations.]

ENGINEERING CRAFTSMEN

In the course of his Presidential Address to the Institution of Mechanical Engineers, Mr. A. Roebuck discussed the question of engineering craftsmen. Engineering, he remarked, has grown much more complicated during the last three or four decades and there has been a corresponding increase in specialisation in the work of engineers. At the same time there has been a drive towards greater simplification of work processes and a concurrent tendency towards line production in certain industries and, where this has been adopted, it has often resulted in production on an increasingly large scale. The result has been that in certain industries the demand for high-grade craftsmen actually working on the production line has lessened, but within the overall structure of Britain's productive capacity highly-skilled craftsmen are still essential in even larger numbers than formerly.

In fact, there are engineers attached to all the industrial groups and services. In round figures, about one-third of the employed are women, leaving something under 15 mill. male workers aged 15 or over who work for pay or gain. How many of these male workers are craftsmen? Looking a little closer into the various categories of workpeople engaged in the engineering industries of Great Britain under the headings: fitters, turners, patternmakers, moulders, sheet-metal workers, blacksmiths, and platers, it is estimated that in these trades there are something over 500,000 skilled workers.

These are the workers skilled in production, and among them are the real craftsmen. Let us never forget the essential function they all perform in delivering the goods. The scientific and research workers, the administrators, the designers, the cost accountants, the planners, form only part of a team and, without the workshops and the men in them, would soon fall by the way. Sir William Bragg once said: 'The improvement in craftsmanship depends in large part on the absorption and adoption of scientific discovery.' Sir William was stressing this need to 'work together.'

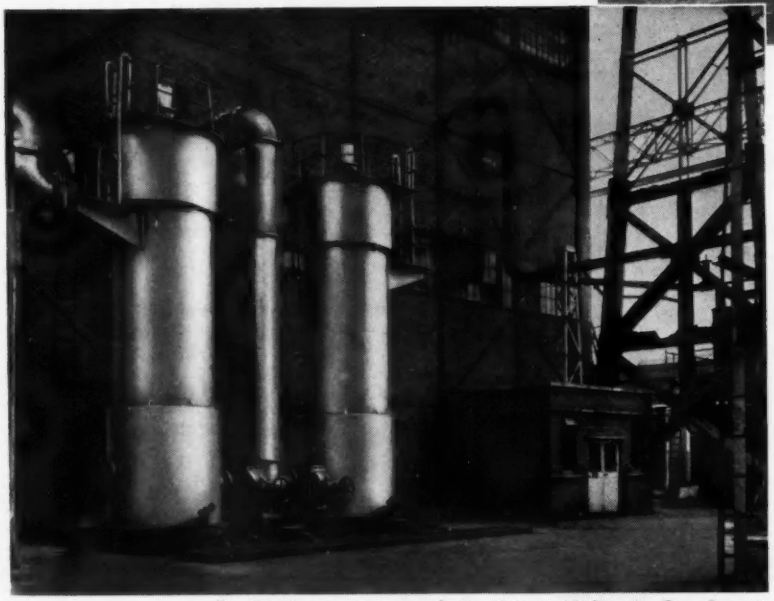
'LIFE IN 2000 A.D.'

The Royal Society of Arts will reach its bicentenary in March, 1954, and with this in mind its Council is arranging a competition which will focus attention on the future. The first public announcement of the competition was made by the Duke of Edinburgh, as President of the Society, at the inaugural meeting of the 200th session on November 18. The Society offers prizes totalling £500, the largest being £250, for conceptions of life on this planet in the year 2000, and forecasts (in visual or written form) are invited of the future developments which may be looked for in some particular aspect of life related to arts, manufactures, and commerce, the field of the Society as defined in its full and original title. For example, a competitor might give his ideas of what transport, housing, food, or clothing may be like in 2000. The chief criterion in assessing the entries will be originality. Terms and conditions relating to the competition, together with registration forms, may be obtained from the Secretary, Royal Society of Arts, John Adam Street, W.C.2. Registration forms must be completed and returned together with an entry fee of 1s. by February 15, 1954, and the actual competitive material submitted by June 30.

The Duke said the idea was to stage an exhibition of entries, which, by informed guess work and wishful thinking, would give the public an idea of what to expect 46 years from now, assuming that nothing drastic happened in the meantime to upset them. He hoped the competitors would enjoy themselves. 'I wish that I could take part myself, but other things will be demanding my attention.'

The most impressive feature of the Society was that after all these years, the original pioneering atmosphere was so strongly apparent. There was no obsession with the past; the Society remained essentially forward-looking and practical. It was not just concerned with doing things in a different way, which some people called progress, but with doing practical things in better ways, which was real progress.

Holmes installations at Foleshill



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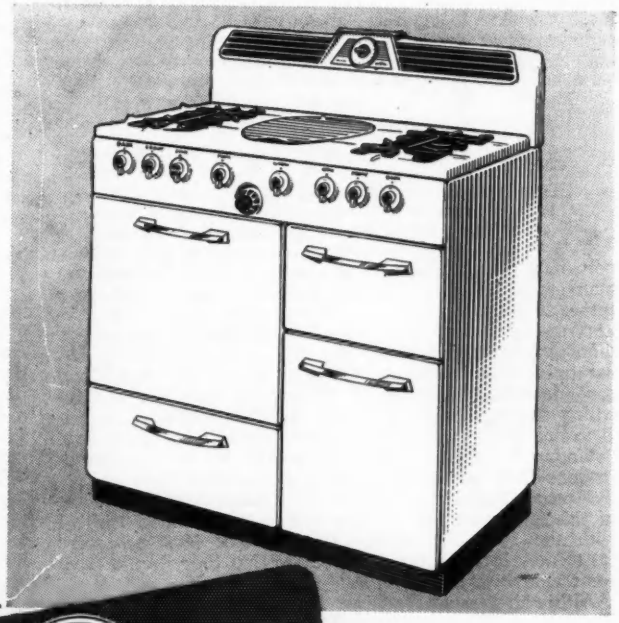

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Some Aspects of

AN EMPLOYMENT POLICY

FROM A PAPER TO THE LONDON AND SOUTHERN SECTION OF THE INSTITUTION OF GAS ENGINEERS, NOVEMBER 17, 1953, BY

R. N. B. D. BRUCE,

O.B.E., T.D., B.A., Staff Controller, North Thames Gas Board.

THE negotiating machinery in the industry since nationalisation is not greatly different from what it was before that date, or, in fact, from what it is in any other large organisation where formal negotiation of terms and conditions of employment is recognised. The present machinery in the industry stems from the Gas Act and particularly from clause 57 (I) (a), a rather involved one, which states that:—

'It shall be the duty of the Gas Council to seek consultation with any organisation appearing to them to be appropriate with a view to the conclusion between the Gas Council and that organisation of such agreements as appear to the parties to be desirable with respect to the establishment and maintenance of machinery for the settlement by negotiation of terms and conditions of employment of persons employed by area boards and the Gas Council, with provision for reference to arbitration in default of such settlement in such cases as may be determined by or under the agreements.'

Joint Negotiating Bodies

As a result of this a number of constitutions and agreements were negotiated at national level with corresponding area constitutions and agreements. If I were to ask you the number of separate unions with which negotiation can take place in our industry. I think you would probably not give the correct answer; there are in fact over 50. The major joint negotiating bodies on a national level are less in number, and these 50-odd bodies are represented on one or more of the following and on their counterparts at one area level or another:—

The Senior Gas Officers Joint Council.
The National Joint Council for Gas Staffs.
The National Joint Industrial Council for the Gas Industry.
The National Joint Standing Committee for Intermediate Grades.
The Confederation of Shipbuilding and Engineering Unions (with its 39 constituent members).
The Amalgamated Union of Building Trade Workers.

In a perfect world there would be no need to have a personnel officer, and it might be that we should need no managers or engineers at all, but Utopia might well be a rather unhappy place. In theory a personnel officer is not really required, and in any event (again, however, in theory) he should have no executive functions but should act only in an advisory capacity. Although, in general, gas boards are autonomous there is at least one field in which this autonomy is by no means complete, and that is in negotiation of terms and conditions of employment.

Under 57 (I) (a) of the Gas Act, this is a collective responsibility and in fact it had grown up to be a collective responsibility long before nationalisation. As a result of this it is necessary to have some specialist staff to deal with the questions which arise, so that it is necessary (a) to appoint such officers, and (b) that they should have some executive functions.

Although personnel officers from time to time will issue instructions which will have to be carried out in order to implement the national decisions and also to obtain some degree of uniformity of interpretation of a board's policy, it is essential that the manager, at whatever level he exercises his responsibility, should make it his business to impress upon the employees in his particular field that the decisions which are conveyed to him are his decisions as a manager. This is simple in a small undertaking where only about 200 people are employed, but when units the size of an area board are concerned much conscious thought must be given to the proper channels of communication in order to achieve this.

From time to time in discussions about various organisations we see references to 'middle management' and 'higher management.' Personally I think these are terms which we should try to avoid if at all possible. Decisions, although of a collective nature, which are conveyed to a number of managers should, I suggest, be given out as decisions of the individual conveying them to those who have to carry them out.

Respect of Decisions

I do not think the operatives themselves would continue to respect a manager who over a period seeks to delegate what may be unpopular decisions by references to others above his head who have either taken them or advised him to do so; they will respect him more if they feel, as they should, that these are decisions which he himself definitely supports.

Welfare or labour officers where employed in local units of an area board—*e.g.*, divisions or groups—must be responsible directly to the manager and should be his adviser in carrying out any executive instructions he may receive from the headquarters personnel department. While there is no harm in, and in fact everything to be said for, meetings between the headquarters personnel department and local officers, in general they should be limited to an exchange of views and not the issue of instructions; they can be extremely valuable in explaining in more detail some of the active instructions which have been issued. There are differing views on this question of organisation within large industries, but the general principles which I have set out are, I am sure, sound. There is an interesting booklet which has just been published by the Acton Society Trust entitled 'Management Under Nationalisation'; it does, in fact, cover the general field of management in a large organisation and poses the various problems in a stimulating way.

Need for Forward Planning

As engineers you would, I think, agree that you were not doing your job properly if you did not have a forward plan for your production of gas or for the maintenance and replacement of your plant, but I think it is true to say that we do not give enough conscious thought to the planning of the selection, training for promotion, and replacement of the employees in our industry, and of course fundamentally the individual must in any organisation be more important than the plant.

The Anglo-American Productivity Team which studied the position of supervisors in America found and reported that there many firms regard the selection of a new foreman or first line supervisor as being as important as the purchase of a new machine and as deserving of a corresponding degree of thought, time, and attention. Personally I should have put the foreman on a higher level than a machine. Basic to any progress, particularly in a developing organisation, is to have the right man in the right place at the right time.

As a first step in an employment policy one must know in any unit or sub-unit of any size the number of persons required to do the job and the qualifications necessary for each job. To use a single word, one needs an 'establishment' to which to work, and I would stress that this should be a target; one should not be a slave to it but make it one's servant, varying it with changing circumstances which

will always occur, or at least should occur, in any live and living organisation.

Unfortunately, the word 'establishment,' perhaps because of its use in the Civil Service and its relationship with 'redundancy,' has become somewhat suspect. But I would say quite seriously that unless one has an establishment in front of one when planning one's employment needs one can go astray by continuing past practice, as considerable alterations in organisation and method are always taking place.

Job Analysis

Parallel with an establishment one should consciously consider, but not necessarily commit to paper, a job analysis of the various jobs in a department, the analysis being more detailed, of course, in regard to jobs carrying more responsibility. Specifications for machines are natural to you, but specifications for a job receive less attention.

Having settled the establishment and the job specification one should attempt to see that the jobs available are filled by those most qualified, and that at all times one is training persons to fill vacancies at all levels when they become available. We ought at all times to have in our minds the question of who would replace the present holder of any job of any responsibility on a long term and on a short term basis. It is a salutary thing, at least once a year, to go through the key jobs in any unit, small or large, and try to decide exactly what one would do if these individuals were no longer available at short notice, and who was being trained to fill them as a firm but long term policy.

On more than one occasion I have come across a foreman who has reached normal retiring age. When the question is asked why he should not retire, it has been said that he could not be spared for another year because nobody has been trained to take his place but someone is in training now. Surely, if conscious thought had been given to a promotional policy this training would have taken place at some considerably earlier date. It should be possible to assess fairly and reasonably the general wastage in all groups of employment, this wastage being by retirement through age and leaving to take up other employment. By this means it should be possible to assess the number of vacancies in various types of jobs available over a period, and thus build up a proper policy of promotion by training for promotion. Analysis of groups of employees by age groups is a useful guide. This should not be overdone, as it is unfortunate if too many people are given training for posts which are not likely to exist in the future—that would be a failure of proper planning.

Sources of Supply

The two major sources of supply of the material required are present employees and persons outside the organisation. While probably the majority of vacancies are in fact filled by internal promotion, there must be a constant flow of intake from outside at the lower levels or in the younger age groups. However they are recruited they must be selected, and this process of selection is one which merits close attention. A conscious job analysis is always useful; having got a job analysis, selection in its simplest terms is choosing the best man to fill such a specification. Generally a specification can be classified under five main headings:—(1) Physical capacity and health; (2) general intelligence; (3) special aptitudes—manual dexterity, verbal skill, etc.; (4) attainments, including education and technical qualifications; (5) temperament and personality.

In this era of rather full employment I think there has been a tendency to become a little bit lax about selection. How should we go about it? First of all we have to bring to the notice of the appropriate people, either within or without the industry details of the job which is vacant, but even at this stage I suggest that there is quite a lot to be considered. I read most of the advertisements appearing in the national papers for situations vacant, and quite frankly I think some of them are rather misleading—some tell too little and some too much. I think one should state clearly what one requires and what one is prepared to pay for it. Out of just over 1,000 advertisements in a well-known newspaper on an average only one-fifth mentioned salary. We should convey to the potential applicant as much information in as simple a form as possible so that the candidates who come forward are those whom we want.

Apart from direct advertisements there are many outside sources that can help in filling vacancies, such as youth employment bureaux, ministry of Labour offices, public schools appointment bureaux, university appointments boards or committees, professional engineers appointments bureau, Ministry of Labour and National Service Technical and Scientific Register, and commercial employment agencies, and others according to the type of person required, and these should be kept in mind. Furthermore, it should not be forgotten that trades unions themselves are considered as authorising agencies under the Control of Engagement Order, and can be useful particularly for craftsmen.

Internal Advertising

Advertising—or bringing to the notice of people—*within* the industry vacancies which are to be filled, is a subject which also requires some thought and depends to some extent on the geography of the organisation concerned and the willingness or otherwise of a potential candidate to move from one area to another. For the more junior vacancies it is probably as well to keep one's application list to the geographical area in which the vacancy exists, for, in the long run, taking the swings with the roundabouts, promotional possibilities will not suffer. For higher posts, however, a wider net should be cast, but again it is necessary to word advertisements carefully.

Internal advertising has some disadvantages. Normally, a manager who is doing his job properly should have a considerable knowledge of his staff and their potentialities. If all jobs are advertised there is a possible delay and some waste of effort in carrying out the formal selection and it may be necessary if the number of applicants is large to decide not to see some of them, and those who are not seen then feel even more unhappy than they were before the job for which they applied became vacant. There are also the people who apply for everything that comes along.

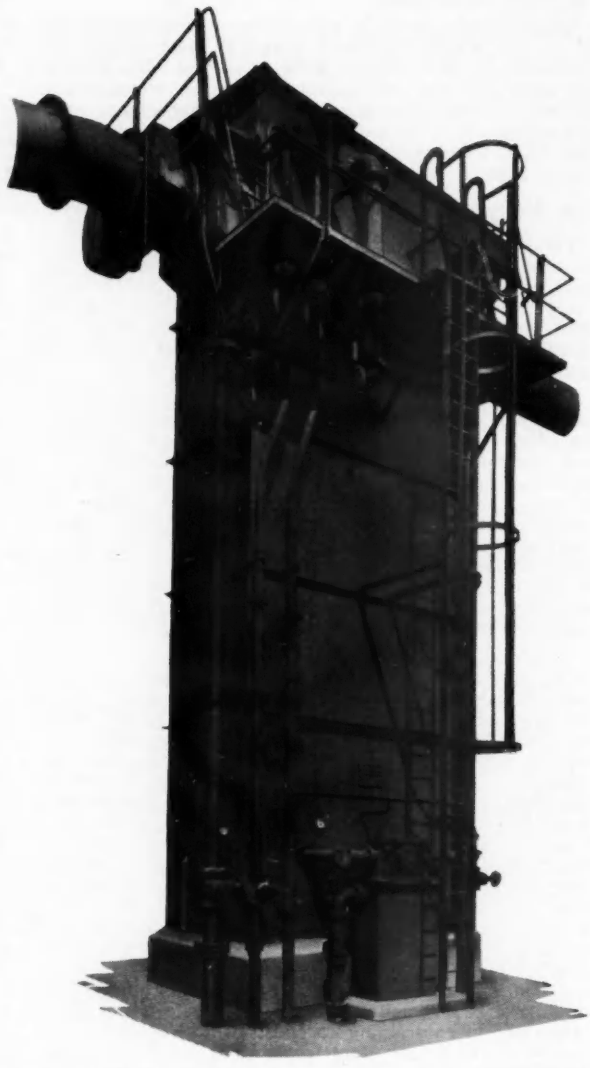
There are, however, pros and cons on this (it is a case of justice being seen to be done as well as justice being done), and I feel that no rigid policy should be adopted, particularly where there is a proper promotional training policy in being which will ensure that well before vacancies occur thought is given as to who shall succeed in particular jobs, as advertising for such posts when it may be obvious who is in the running may lead to frustration.

Reception of Candidates

A great number of minor things can and will influence a candidate in making up his mind whether or not to accept an appointment—*e.g.*, an adequate place in which to wait until his turn comes for an interview, a knowledge that when he arrives at the place of interview somebody knows he is expected, and he is conducted to the waiting room, where he should not be kept for a long period with a number of other candidates—this last point can be assured by staggering one's interviewing programme. Some of these points may seem elementary, but they can be and are overlooked and can have quite an effect on selection. A good candidate may decide that a poor reception mirrors the general attitude of the firm and that it is one in which he would not be happy to spend his future. Do not forget that the firm itself is being interviewed by the candidate.

There is an art in interviewing. The formal interview can be backed up in some cases by intelligence and aptitude tests, but these are by no means the be all and end all of selection; they are better used as a check on the results of interviews. Unfortunately no aptitude test has

(*Continued on p. 537*)



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yet been designed for what is probably the most difficult thing to assess and one of the most important—*i.e.*, to discover a man's attitude to 'the will to work.' The real test of intelligence and aptitude tests is their validation in practice; such a validation cannot take place until a considerable number of persons have been through the test and a norm is achieved. In ordinary circumstances it therefore takes some time for a norm to become available.

Personnel Selection Panel

A planned interview is probably the root and branch of proper selection, and is best carried out by a panel of three interviewers if possible sitting together at the same time. One individual cannot expect to be as consistently sound as a team of three. The interviewing panel must first of all agree on their analysis of the job—let us say we are trying to find the right man for a district representative— some of the requirements would be technical ability, ease of getting on with other people and a good appearance. The panel must decide generally as to whether there are any special attributes for which they must look and they should also decide what if any specific subjects they may introduce into the discussion during the interview and what part they should play in the interview. The aim is to get the candidate to talk, and not to talk oneself.

If possible a representative of the department to which the man will be posted should be one of the interviewing panel and there should be some generally independent person also on the panel, and a decision must be made between them as to who shall deal with which particular parts of the interview. The first thing is to put the candidate at his ease and make quite sure that he knows all there is to know about the vacant job which must be explained to him. At this stage his reaction to the details of the job is always useful. After this the subjects for discussion can be introduced, it being left as far as possible for the applicant to make the running in his own time—awkward pauses may well give some line on the characteristics of the candidate and the interviewers should not be too helpful in getting him over these. It is fatal and unfair for all the panel to start joining in the general run of conversation; they should pass the candidate to one another without the candidate being aware that this is in fact being done.

'Exit Interviews'

A lot can be learnt about the weaknesses of one's own employment policy by conducting what might be called 'exit interviews.' I myself see a considerable number of staff officers retiring when they take their pensions or leaving to take up other employment. At such a meeting one should try to find out the reasons why they are leaving. One would have to sift the reasons they give fairly closely, but a pattern does emerge which might lead to an employer making a change in his employment policy which would be to the benefit of the organisation concerned.

A few words should be said about training and how it fits into the picture of an employment policy. The ideal is to give everybody the *opportunity* of training for promotion, although it must be realised quite firmly that there are some who won't want it and some who can't take it. Training does not mean, or require, the setting up of a central training school, although in a large organisation it is desirable. It means that every supervisor at every level must consciously set himself out to give the opportunity.

However important training on the job may be specialised training is in some cases a necessary adjunct. In a large organisation it is useful and perhaps essential to have an adequate trained pool of replacements. The foremen is a vital link in our chain of responsibility and to some extent a neglected one. A job analysis, while obviously including technical skill, would in my opinion put a lot of weight on personality and leadership. How often have we not reached the position when a foreman's job becomes vacant and his place has suddenly to be filled. For such a big group as foremen, some centralised training is probably desirable. I suggest that we should first examine approximately how many foremen replacements we are likely to require on an annual basis and decide to select 150% of this number for training in a year—adjustments in this number can be made annually. Internal advertising, selection, and all I have mentioned should be gone through to obtain the candidates.

Nearly all training can be a useful guide to selection for promotion at a later date, and it would be foolish if an employer did not benefit from the close observation of the training staff and their reports on the candidates. This does not mean at all that all training courses are specifically tied to promotion, but we can all learn all the time, and all experience and knowledge must inevitably help us on the promotional ladder when the time and opportunity arises.

I have taken the foremen as a class of employee for which the training of candidates is important. It is difficult for a firm of any kind to be progressive unless the foremen and junior supervisors whom they appoint, and for whom they must obviously take responsibility, are competent to carry out the policy of the firm. The foreman is in constant daily touch with the employee and is the leader of the smallest employment unit. He is responsible for putting policies into practice and should see that they are carried out. It is not always the case that this class of employee, which should be the strongest link in a chain, is in fact so.

Summing Up

In any large organisation specialists on the personnel side are necessary; this is particularly true in our industry owing to the fairly complex negotiating machinery for terms and conditions of employment. While fundamentally their responsibilities should be advisory they are, for the various reasons mentioned, partially executive. Where these functions are executive they should be exercised as much as possible through the various managers who at all levels should have their responsibilities as clearly defined as possible, and the decisions which they communicate, whether stemming direct from themselves or from instructions received from other sources, should in as many cases as possible be issued as coming from themselves.

The human element in industry is vital, and more conscious thought should be put into the use of it in the best way and to the best purpose. This can best be achieved by the adoption of a positive selection, promotion and training policy, which is the personal responsibility of all managers, but can be assisted to a very great extent by specialised personnel and training officers, and by some knowledge of the part of the managers themselves of some of the techniques which have been found to be of assistance in carrying out such policies.

DISCUSSION

Mr. A. F. Hetherington (North Thames) agreed with the author that the manager on the spot should assume responsibility in conjunction with the personnel officer. He should not, however, openly take too many decisions himself but should leave them to others. A problem in all large scale industry today was the proper use of the foreman. The old days when the foreman had almost uncontrolled authority had passed and we were now in danger of having taken too much away from his authority. However careful they might be not to undermine the foreman's position the fact was that necessarily nowadays he had to be subject to fairly close control before he took irrevocable action.

The question of incentive had not been mentioned by Mr. Bruce. If they took on a lad of 16 as a gasfitter apprentice his rate of pay was fixed for the next seven years provided he passed the appropriate tests. If he was an exceptional lad he would possibly be taken right out of his trade. At an age when lifetime habits were to be formed it was desirable that there should be some means of rewarding work that was rather above the average. A similar principle should apply to the staff. Standardisation of rates of pay tended towards standardisation of the job to be done, and that might prevent the employment of peculiar individual talent to the fullest advantage.

Mr. K. C. Mead (North Thames) welcomed Mr. Bruce's suggestion that instructions from head office should be 'put over' by local managers as if they were their own. It was a very good principle and one could not fail to agree, but he thought it threw a very great responsibility on the personnel officer or staff controller, because he must, when

(*continued on p. 539*)

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framing his instructions, endeavour to project himself into the mind of everyone who was to receive the instructions. It would be impossible to give instructions to one's subordinates if they started with the idea that they were nonsense. Differences in local circumstances would result in variations in the impact of instructions.

He welcomed Mr. Bruce's reference to establishments but suggested the need for fluidity in compiling them. So often one works was compared with another solely on the ground of similarity in the quantity of gas produced, but it did not necessarily follow that works of similar output required exactly the same number of workers. It was conceivable that one works might need both a coal foreman and a coke foreman, and another might not need either.

Exit interviews were an excellent idea. They ought to be conducted at the works or district office by the local manager, the works engineer, or at least his deputy. He should if possible interview everyone who was leaving and find out the reason. The principle was started many years ago at Brentford, and he had the job of seeing everybody who left. After three years he came to the conclusion that only in about one case in 10 did the men give the real reason for leaving. He sometimes got half, or perhaps three-quarters of the story, but he rarely ascertained the truth. He hoped that when his own time came to retire Mr. Bruce would give him an exit interview. He could assure him that he would learn a lot.

Communication of Ideas

Mr. L. T. Minchin said he was interested to note that the question of communication had been introduced. The transfer of ideas, facts, and information from one part of the community to another was one of the most important things in the healthy working of an organisation. It was important that everyone should know what was happening in the rest of the organisation. There were many interesting ideas being mooted at present for bringing about a greater degree of communication, so that not only did one department know what the next department was doing, but the management knew what the worker was thinking. It was important that people should be guided willingly rather than that they should be coerced. It was unfortunate that in the nationalised industry they did not find a great deal of inspiration. It was mostly in private firms that things were happening. Being no longer employed in the nationalised industry he felt free to say that his career in the gas industry would have been a pleasanter one if there had been greater collaboration between the people above him and those with whom he was working.

Mr. E. W. Bennett said a lot of the negotiations which at present went forward to the area joint industrial councils or to the personnel officers could very well be carried out and finished with at local level. Many minor matters, including stupid things which were liable to cause controversy, could be cleared up if there were a little more give and take.

Mr. A. F. Grant (North Thames) thought no-one would deny that in many ways the foremen were the key people in the gas industry and in most engineering industries. He thought they would also agree that their job today was much more difficult than before the war. The question of the appointment of foremen had been discussed, but not the question of recruitment, which was not a matter that could be settled 12 months before appointment. Recruitment was a matter for consideration five or six years before actual appointment. The foreman on a gas-making plant today could hardly be regarded as an unskilled individual who had picked up sufficient knowledge during his period on the plant to enable him to control it. It was a mistake to suppose that because gas making plant was largely manned by co-called unskilled personnel they had to recruit the foremen from the same source. He saw no reason why there should not be an apprenticeship scheme for future gas-making personnel in the same way as for craftsmen.

Mr. L. C. S. Poulter (North Thames) said Mr. Bruce had mentioned that any decision made at headquarters should be put over as the responsibility of the operational manager. He felt sure he had said that purely in a theoretical sense because he must know only too well that the responsibility stemmed from the Gas Council. Those who had consulted for five, 10 or more years with men who were deeply immersed in union affairs realised that those men knew that proposals came from above. They probably knew as well as, if not better than, the operational manager all that was involved in the instructions.

Mr. L. F. Garner (Eastern) referred to a tendency on some works to accumulate a lot of old men who were unfit for heavier work—men who in their younger days had been stokers or coke carriers and so forth but who were getting older. He asked whether in the North Thames area they transferred such men to other departments or kept them for odd jobs.

Mr. H. M. Lawrence (Portsmouth) said human material in industry was the most valuable raw material they could have. Mr. Bruce had rightly said that he learnt a great deal from his exit interviews. Some valuable things might have been learnt earlier by a psychological or sympathetic approach before the time came for men to leave the industry.

The Art of Interviewing

Mr. E. O. Rose (Tottenham) said that in his opinion they were right at the beginning of the personned management business. Mr. Bruce had outlined the problems very clearly and he thought they would all agree with what he had said. None of them possessed all the technique for carrying it out. They knew they ought to have establishments, and they knew they ought to make the whole system flow easily so that one could advance from one job to another without difficulty. Mr. Bruce had remarked that nearly everybody thought he could interview better than anyone else—implying that by no means everybody could interview. Personally he had been interviewed many times and he had always found that the interviewer was more nervous than the person who was interviewed.

Mr. Bruce, replying to the discussion, said that in his opinion they should always try to delegate responsibility downwards, and he would welcome a trial in getting a foreman to accept the actual responsibility of taking a man on. They ought to give more attention to what he would call the 'induction' of an employee into his job, and that was particularly necessary at the operative level. As to recruitment of foremen he suggested that they should make up their minds what they wanted and let the training departments know, so that they could advise them on what sort of course should be arranged for potential foremen. Mr. Hetherington had raised the question of incentive to young apprentices whose work was above the average. Unfortunately there were some people who wanted to pay the top rate for the man who worked least, and if they introduced incentive or merit payments it was going to be very difficult to keep within the bounds of reason.

Rôle of the Foreman

He thought Mr. Mead agreed with him that the foreman was the man to convey decisions to the men. It was vital that the foreman should be aware of the reasons behind such decisions. Reference had been made to communications and consultations—both subjects too big to be dealt with in the present paper. Much could be done to improve their internal communications. His answer to Mr. Garner was that the North Thames Board had not so many older men who were physically unable to carry out their normal jobs as some thought. Every department had to provide for its own men of those types, and he thought there were jobs to be found for them.

Mr. R. J. McCrae (Personnel Manager, South Eastern) proposed a vote of thanks to Mr. Bruce. **Colonel J. A. Gould** (Distributing Engineer, South Eastern) seconded, and **Dr. J. Burns** (Chairman of the Section) added his personal thanks to Mr. Bruce for acceding to his invitation to present the paper.

The discussion was followed by the presentation of a film illustrating an interesting main-laying project on the island of Walcheren. It dealt with the installation of the under-water high pressure feeder main crossing the Westerschelde. The showing of the film had been arranged by Mr. J. W. Denton, immediate past Chairman of the South Western Section of the Institution, who gave a running commentary on it.

AUSTRALIAN GAS INSTITUTE

THE Transactions of the Australian Gas Institute for 1952 show another session of progressive and lively discussions on papers covering 'The Modern Coke Oven and Its Place in Industry,' 'Coal in Relation to the Gas Industry,' 'Lurgi Pressure Gasification Process' and so on. The award paper was submitted by Mr. J. Blackman on the subject of customers' accounting and credit control. Mr. Blackman described methods and procedures for a gas undertaking which supplied about 70,000 customers. For other undertakings, modification would be necessary, because ready-made accounting systems were like ready-made suits; they seldom fitted well. Which remark would give some indication that the author, together with his fellow authors in the Transactions, was prepared to be honest as well as competent.

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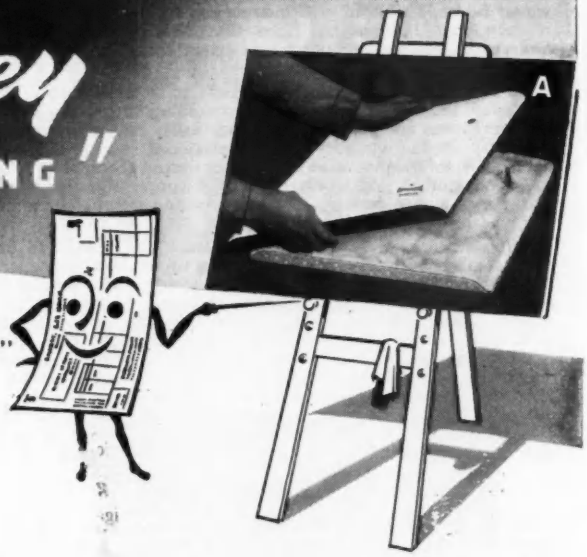

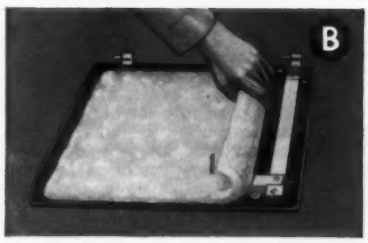

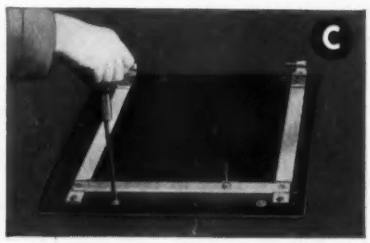

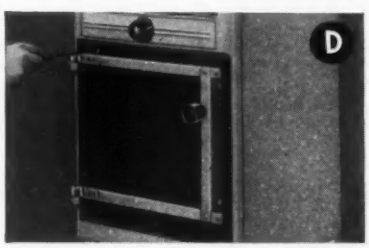

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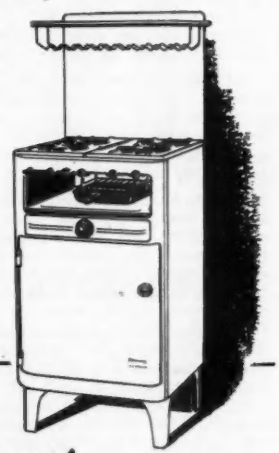

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IN PARLIAMENT

'Goings on' in the Old Kent Road

As a pattern for an efficient questionnaire which any doubting wife might put to her husband to crystallise her suspicions, that put by Mr. G. A. Isaacs (Lab. Southwark) to the Minister of Fuel and Power on November 16, would rank pretty high.

Much of its piquancy arises from the fact that the question, although of an omnibus nature and seemingly completely comprehensive, leaves the defendant in doubt as to what sort of answer will give the questioner some measure of satisfaction; or, indeed, whether the questioner can be satisfied at all.

Mr. Isaacs asked: 'Why, in view of the policy of the Government with regard to the day-to-day activities of nationalised industries, he accepts invitations to visit individual gas works; how many such visits he has paid in the last three months; and if he will name the works concerned and make a report to the House on the reason for, and the result of, each such visit?'

To the observer, that question seemed to have all the attributes of a real 'block-buster.' The Minister's power to convert it into a very 'squibby' affair by the simple reply: 'I have made no visit to gasworks in the last three months . . . .' was, if not a revelation, decidedly impressive.

But the Minister is by no means averse to studying gasmaking and the technique of retorting as practised in the gas industry, as was shown by the rest of his reply. He continued '. . . . but I hold myself free to make such visits if I consider that they will assist me in the performance of my duties, either at the invitation of the gas board concerned or on my own initiative.'

Mr. Isaacs followed his opening broadside with a burst of more selective questions which served to get the business round to the Old Kent Road gasworks; in fact, they appeared to disclose two very surprising facts: (a) that the Minister has, at some time recently rather recklessly we assume, let it be known that he would extract some measure of delight from a visit to the Old Kent Road; and (b), that the Minister has been told that he could save £200,000 a year as the result of a two-hour visit.

Such staggering thrift to be achieved by the pleasing process of the Minister extracting two hours of self delight from a drift down the Old Kent Road is something which, to our naive outlook, suggests the existence of a situation not without interest. We would dearly love to hear more from the mysterious informer. The Minister, too, appears to share our feeling because he, although not willing to publicise his preparedness to indulge wantonly in the delights of the Old Kent Road, is hoping, he says, to have a talk with Mr. Golding soon.

Mr. Isaacs reaction to this disclosure was to request the right hon. Gentleman to report to the House when he has, in fact, 'knocked 'em in the Old Kent Road.' To prove that we have no pretensions to insularity in the matter of modern idiom we feel inclined to bring ourselves, rather painfully we admit, to suggest that where such bulbous lolly is on offer Mr. Golding seems to be the right man to talk to.

In the Commons, following the affair of the Old Kent Road, Mr. W. Hamilton (Lab. Fife West) wanted to know what progress the National Coal Board has made in producing a smokeless fuel from nutty slack and when this would be available in quantity to the general public. The Minister's answer dropped nutty slack stock a few points. He said that one of the main objectives of the Board's research in the field of smokeless fuel production was to widen the range of coals that could be used, but nutty slack was unlikely to prove suitable for that purpose.

S- -

Brigadier F. Medlicott (Nat. Lib. and Con. Norfolk Central) asked the Minister of Housing and Local Government how soon he anticipated receiving the report of the Air Pollution Committee.

Mr. Marples, Parliamentary Secretary: 'My right hon. Friend expects to receive the committee's interim report shortly.'

Mr. A. Blenkinsop (Lab. Newcastle-upon-Tyne) asked whether the Minister will enable local authorities to establish smokeless zones without the expense and delay of promoting Private Bills.

Mr. Marples: 'This is a matter on which my right hon. Friend would prefer to await advice from the Committee on Air Pollution.'

In the House of Lords also, 'Smog' in relation to public health received considerable attention on November 18. Lord Amulree, in opening the debate, referred to the fog lasting several days in December, 1952, when between 4,000 and 5,000 people were estimated to have died as a result, and asked what progress had been made in making available an adequate supply of smokeless fuel for domestic use. After quoting figures for some previous epidemics, Lord Amulree said they must not take too panicky a view for it was obvious that this sort of thing had been going on for some time before 1952.

'The effects of fog,' Lord Amulree pointed out 'are not confined to London—Glasgow, seven other large towns in Scotland, where there was no fog, the Manchester and Salford district have all suffered from time to time.

'The reason why fog in 1952 was a rather more dangerous fog than those we had suffered before is that there was a much greater concentration, so far as we could make out, of sulphur dioxide in the air at the time. It seems that there is some kind of correlation between the sulphur dioxide content of the air and deaths from fog.'

If smokeless zones were to be provided in our cities fuel that people could burn must be provided, among them natural and manufactured fuels that could be used for practically any domestic use, steam-raising, drying, furnace heating and similar purposes. The old type of grate did not burn all fuel completely, but newer grates or stoves did that to a much greater degree. Numbers of these continued to increase.

Fuel Washing ?

There were now nine power stations on the banks of the Thames, in the valley of which the worst smoke concentrations and misty conditions making for fog occurred. Before the war, he believed, it was not compulsory, though customary, for the fumes coming up to be washed, and when done effectively, he was told, a 97% efficiency could be obtained. One thing that had been considered was fuel washing. Fuel washing was extremely expensive, but one had got to weigh up that expense with the cost of fog to London. One saw stone corroded and people becoming sick and ill. That was all due to something connected with domestic or industrial fuels, so, although fuel washing was a costly matter, in the long run, one had to weigh it up against the cost to the community in coping with the effects of fog and of smoke. It was possible, of course, to put new boilers and fires into existing premises; but there again it was an expensive business. Reports of Committees presided over by Lord Simon and Lord Ridley worked out that to get the whole country to burn smokeless fuel in domestic grates would need about 25 million tons a year, but at present output of it was about 6,220,000 tons. One of the suggestions made at a Smoke Abatement Congress in Glasgow was that there should be five or six big smokeless areas, comprising London, the Black Country, South Lancashire, the West Riding, the Tyne, the Tees and the Clyde. It was estimated that these areas would need for domestic purposes above 13 million tons of smokeless fuel a year. It was claimed at that conference that 10 million tons could be made available by the end of 1957 and 15 million tons by the end of 1962. Quite obviously, if these estimates were practical, and these areas could be turned into smokeless zones, a great deal of money and trouble could be saved, and people would become very much fitter and healthier.

'It is fair to say that we are making a good deal of progress,' said Lord Selkirk in replying to the debate. 'For instance, London is consuming no more coal as a whole but is consuming today more smokeless fuel than it was ten years ago—more anthracite, coke and other smokeless fuels. The consumption of gas has gone up by 50 per cent., and the domestic consumption of electricity by nearly 100 per cent. in those ten years. If I may add this, though it has not been mentioned this afternoon, the much maligned nutty slack was not on sale in London until December 1, 1952. Accordingly, it is not really possible that any appreciable quantity was being used during the period of that fog, and indeed there is really very little in use in London at the present time.'

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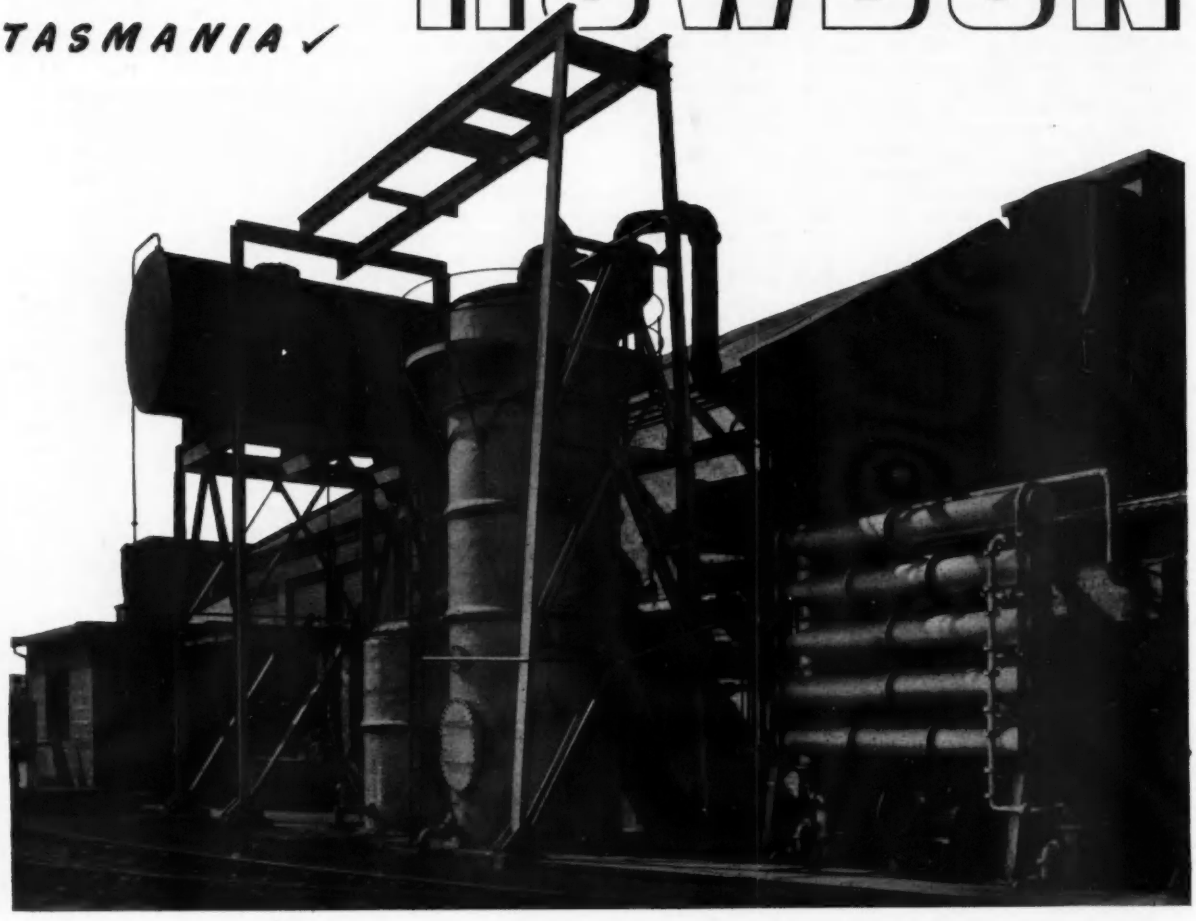

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ROAD MAKERS IN CONFERENCE

THE value of full and frank consultation between the producers, distillers, and the users of road tar was again apparent when the 1953 annual meeting of the British Road Tar Association (Eastern Section) with borough and county surveyors and road engineers was held on November 4. This was the first occasion that Bedford had been chosen for the function.

Presiding at lunch at the Dujon Restaurant, Mr. J. Hunter-Rioch, the convenor of the meeting and General Manager of the Eastern Gas Board, Cambridge Division, proposed the health of the guests and extended a welcome to what had proved an all-time record attendance. He recalled that it was in 1946 that these meetings were inaugurated in the Eastern Counties, and from all accounts and from all quarters they were thoroughly enjoyed by the surveyors, engineers, distillers and producers.

In outlining the aims and objects of the B.R.T.A., Mr. Hunter-Rioch claimed that the results achieved and the knowledge gained were of ultimate advantage to all concerned.

A high degree of importance was placed on these meetings with surveyors, because they provided an opportunity to discuss the problems which arose in regard to road tar, and show their experiences to mutual advantage. Congratulations were due to all concerned on the condition of the roads under the heavy demands placed on them today.

Mr. T. H. Longstaff, Vice-President of the County Surveyors' Society and County Surveyor of Huntingdonshire, replied on behalf of the guests, and in reminiscent mood recalled the many developments which had taken place since the highways of this country mainly consisted of water-bound material, when clouds of dust were caused by every passing vehicle. The great improvements which he had witnessed during the past 40 years had been due to tar—and perhaps bitumen. The important, helpful and patient services of the B.R.T.A. were widely and deeply appreciated, and there could be few associations which supplied such services so completely and helpfully in assisting himself and his colleagues in maintaining the highways system to a high standard with the limited funds placed at their disposal.

A discussion was introduced by the Chairman of the B.R.T.A., Mr. J. Davidson Pratt, who asked the meeting to be provocative about the report of the House of Commons Select Committee on Estimates for Roads which was issued in June last. This stated that research and experimental work which had been performed by the road research laboratories was not being disseminated as well as it should be, and was not coming to the knowledge of the surveyors. He also asked the surveyors to say whether the Association's publications and technical service were of the type that were needed: were they too highbrow and lacking in practical details, or what? 'Do we put across to you the new information and results of experiments in the form which is realistic and practical; and are there any reasons why that information should not be applied more quickly and extensively than it is at the present time?'

The conference produced a wide range of views on many aspects of the B.R.T.A.'s work and activities. After Mr. Davidson Pratt had replied, a vote of thanks for his attendance and assistance was proposed by Mr. R. A. Weston, General Manager, Eastern Gas Board, Norwich Division.

In the afternoon a visit was paid to the works of Meltis, Ltd., chocolate and confectionery manufacturers. This was made possible through the courtesy of the Directors, and during the tour the visitors were able to follow the complete process of production. At the conclusion, tea was served in the canteen, and thanks were expressed by Mr. Stanley Robinson, Immediate Past-President of the Association.

Weston-super-Mare W.G.F.

A NEW branch of the Women's Gas Federation was inaugurated at Weston-super-Mare on October 28. The attendance at the demonstration theatre was so great that the speeches were relayed to an overflow assembly in the showroom.

The Mayoress (County Alderman Mrs. E. M. Miller-Barstow, M.B.E., J.P.), first President of the Branch, Dame Vera Laughton Mathews, D.B.E. (Chairman of the National Executive), the Mayor of Weston-super-Mare, and Mrs. C. H. Chester, C.B.E. (Chairman, South Western Gas Board), were welcomed by Mr. T. N. Dent (Manager, Weston-super-Mare Sub-Division). Also at the meeting were Miss O. L. Humphries, former Chairman, Miss J. Frith, O.B.E., General Secretary, and Mr. James Carr, O.B.E., M.C., Area General Manager of the South Western Gas Board.

Mrs. Miller-Barstow, in her address, said she was delighted to act as the first President as she felt that the formation of a branch would help women to improve home life and to keep up to date with all modern appliances and inventions; also it would be possible to learn how to use gas to the best advantage.

Dame Vera Laughton Mathews, in her inaugural address, said that this was the first branch meeting she had attended since being elected Chairman of the National Executive. She outlined the objects and aims of the Women's Gas Federation and pointed out that the organisation was represented on the Ministry of Fuel and Power Women's Advisory Committee and that the Federation had in fact sent a resolution to the Ministry asking for the removal of purchase tax on water heaters, which appeared to have had some effect, in that the tax was reduced somewhat. The Federation had a reputation for being a very friendly organisation.

She would like to see many more women in local government and a member of the Women's Gas Federation on every housing committee. It needed efficient planning of one's work to allow time for outside interests; it was extraordinary the way some women put up with inefficient appliances in their homes. The Federation could help housewives to know what could be improved and what was essential for efficient running of a home; it could also give them confidence to voice their opinions.

Dame Vera had a lot to say about smoke abatement, and stressed that we should not be 'Smug about Smog.'

Mr. C. H. Chester promised the Branch that the Board would give it full support and would welcome any reasoned views about the Board's operations. It was important that the gas industry should have the housewives' point of view, and it was important that women should teach their husbands what women should have to make life comfortable.

Mr. Chester proposed a vote of thanks to the President of the new Branch for her stimulating opening of the meeting, and to Dame Vera Laughton Mathews for her inaugural address.

Coke Marketing Scheme

THE London and Counties Coke Sales Circle at its meeting at the Holborn Restaurant on October 30 discussed the new coke marketing scheme approved by the Minister of Fuel and Power to operate in the areas of the Eastern, North Thames, South Eastern, Southern, and South Western Gas Boards as from November 1.

Mr. F. S. Evans (Coke Manager, South Eastern Gas Board), introducing the subject, traced the history of the development of coke marketing from the early days of the 1914-18 war to the present day. He stated that the main points that had to be borne in mind in the formulation of the new scheme were that it had to be simple and economically sound, it had to assist in ensuring that the right type of coke was delivered at the right place at the right time, it had to satisfy the Minister of Fuel and Power, as he had responsibility for prices under the Wholesale and Retail Coal Prices Orders, and it had to satisfy the hard coke industry.

Mr. Evans outlined the scheme and mentioned briefly the following points. The area of the five boards had been divided into 18 zones based on local authority areas. In each zone coke will be sold to 'all comers' at works at 'current price ex works,' or for regular business covered by contract and arranged to suit the boards' loading time schedules, at a reduced price known as 'contract price ex works.' If coke is delivered to consumers' premises, the price to the consumer will be based on the size of delivery the buyer is willing and able to take at one time to any individual address.

Further points in the scheme are: (1) The appointment by the boards of authorised distributors who are able to provide a full technical service to customers, for which an allowance will be made on the contract price ex works. (2) The boards propose at their option to seek the services of certain distributors who are able to receive or collect coke from other than the local works to suit the convenience of the board. This would involve the distributor in extra expense, and allowance will be made for this off the contract price. (3) The boards are prepared to avail themselves of the services of a factor and will continue to pay commission on approved sales.

Following Mr. Evans' talk, the subject was thrown open for discussion in which many members participated.

The Chairman (Mr. D. G. Rose) thanked Mr. Evans for his introductory talk and for answering the questions raised.

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30/GM19

News in Brief

Change of Address.—W. Edwards & Co. (London), Ltd., have moved to new premises at Crawley. All communications should be addressed to the firm at Manor Royal, Crawley, Sussex. The telephone number is Crawley 1500.

Stewarts and Lloyds, Ltd., have received through Williams Bros., the well-known American contractors, an order for several hundred miles of pipeline for the Haines-Fairbanks pipe project in British Columbia and Alaska. The value of the order is approximately £1 mill., and will be paid for in dollars. It has been secured in face of international competition. The manufacture of the pipe will be undertaken in the company's works in Glasgow, South Wales, and the Midlands.

As a Further Sign of London's gradual return to later night-life, the Ideal Home Exhibition will revert to its pre-war hours—10 a.m. to 10 p.m.—at Olympia next March. New party facilities are announced. Parties of 12 or more may buy advance tickets at 2s. 6d. before their visit which will admit them at a special party entrance, under cover, at which coaches can draw up. Such parties will be able to book tables for evening meals in the restaurants and reserve free seats for five special cookery demonstration theatres.

Cookery demonstrations attracted record attendances at Londonderry and Strabane recently. Miss Main, the Chief Demonstrator of R. & A. Main, Ltd., was watched by 1,300 people at Londonderry; at Strabane 413 people watched eight demonstrations arranged by Mr. J. Lusted, the Gas Manager.

Since the Edinburgh Division of the Scottish Gas Board offered two types of gas cookers for sale on the 1s.-a-week instalment plan, their sales have doubled. Roughly 500 inquiries are made each week by people anxious to take advantage of the scheme, which includes free delivery, installation, and maintenance. The prices of the two offered at 1s. a week are £21 17s. and £21 5s. 6d.

Figures issued by the Central Statistics Office in the Republic of Ireland for August, 1953. show imports of 21,811 tons of gas coal, valued at £121,540, all of which came from Great Britain. This brings the total of these imports for the first eight months of 1952 to 177,565 tons, valued at £1,075,676, all of which came from Great Britain. The figures for August, 1952, were 15,856 tons valued at £99,622 (all from Great Britain), and for the first eight months of 1952, 185,887 tons, valued at £1,115,004 came from Great Britain.

The General Descaling Co., Ltd., is undertaking an extensive contract for the descaling of gas mains for the Azienda Municipale del Gas di Palermo in Sicily and has sent a considerable quantity of equipment and its skilled operators from this country for this purpose. The original contract was for cleaning 10 kilometres of gas mains up to 200 mm. in diameter but has since been extended by a further 15 kilometres.

Complaints that electrical appliances carried an unfair rate of purchase tax compared with those operated by gas and oil were made at a meeting in Birmingham of the Midlands Electricity Consultative Committee, when it was decided to ask the Midlands Electricity Board to investigate the differentiation. A resolution by the North Staffordshire Committee that the Government be asked to remove entirely purchase tax on domestic and labour-saving electrical apparatus was withdrawn in favour of an amendment, moved by Councillor G. T. Baldwin, of Malvern, which asked the Board to find out why electrical appliances should still have to carry a greater rate of tax. It was pointed out that when the differentiation was made, electricity supplies were limited, but that this no longer applied.

Company News

SERCK RADIATORS

The group trading, etc., balance of Serck Radiators, Ltd., to August 1, 1953, was £608,116 against £447,575 for the previous year. Deducting depreciation £51,835 (£44,022), replacement reserves £15,000 (£10,000), loan interest £5,000 (£1,767), directors' and auditors' remuneration £32,729 (£28,816), pensions £7,500 (£6,576), capital issue expenses £425 (nil), and tax £304,094 (£221,638), leaves £191,533 (£134,756). Final dividend 10%, making 15%.

FALK STADELMANN

Group profit of Falk, Stadelmann & Co., Ltd., for the year ended March 31 was £400,156, compared with £662,256 for the previous year, the decrease being due to reductions in sales, particularly in the second half of the year. The net profit of the parent company was £56,795 against £105,834. In his statement issued with the report and accounts, Mr. H. Falk states that although the company is still faced with many diverse problems, there is, and has been for some months, in the home trade a more even flow of production and sales, and these show an encouraging increase compared with the same period last year. Many of the products recently introduced by the organisation are now in great demand, he adds. 'Taking all factors into account, we can anticipate improved results in the current year.' Consolidated current assets aggregate £2,523,643, as compared with £2,944,784 a year ago, of which debtors and prepayments amount to £866,335 (£1,012,208), stocks and stores £1,576,421 (£1,870,004) and cash £68,003 (£53,732). Current liabilities and provisions of £1,013,703 (£1,259,809) include creditors £640,710 (£827,461) and overdrafts £169,866 (£196,164). Revenue reserves stand at £836,556, against £905,689.

WILLIAM SUGG

Trading profit of the William Sugg & Co., Ltd., group for the year ended June 30, 1953, was £141,486, plus interest £2,491. After depreciation £9,231, bonus to employees £16,436, superannuation £6,263, taxes £76,478, including E.P.L. £19,000, etc., net profit was £32,872 against £21,974. Dividend is 10% and bonus 15% (both same), plus Coronation bonus 10%, free of tax. Mr. Philip H. Sugg, chairman, in his statement, says taxes reduced profits 'to a very meagre figure' compared with turnover and true capital employed. A good start has been made to the current year and orders on hand are sufficient to justify the hope of another satisfactory profit.

THOMAS W. WARD

The report and accounts of Thos. W. Ward Limited, Albion Works, Sheffield, for the year ended June 30, 1953, propose the payment of a final dividend on the ordinary shares of 15% less tax, making a total of 20% less tax, and a final dividend of £5 17s. 6d.% on employees' shares, making a total of £10 17s. 6d.% tax free. In addition, the directors recommend the payment out of capital profits of a bonus of 2½% not subject to income tax, on the ordinary and employees' shares to mark the 75th anniversary of the founding of the business and the 50th annual general meeting of the company. There is a net profit available for allocation and appropriation in the accounts of the parent company of £590,835 compared with £574,955 last year.

WRIGHT, BINDLEY & GELL, LTD.

The report and accounts show a balance of profit for the year ended June 27, 1953, of £368. The dividend is 5% as against 10% last year. The 6% cumulative shares will be paid in full. In a statement by the Chairman, Mr. W. B. Lane, it is pointed out that unfavourable conditions together with a marked decline in exports markets, and enforced writing down of stocks resulted in the balance on trading account falling from £83,280 in 1952 to £14,274.

NATIONAL BENZOLE HOLDINGS

National Benzole Holdings, Ltd., has been formed to hold all the shares of the National Benzole Co., Ltd., which markets petrol mixed with British benzole. The operating company was formed in 1919 by a group of companies making benzole, and the list of holders of the ordinary shares in the holding concern is now quite long. There are 54 companies each holding one ordinary share of £1 each. They include the Gas Council, area gas boards, leading steel makers, chemical and tar manufacturers, and the British Transport Commission. No dividend is to be paid on the ordinary shares. The holding company has issued £2 mill. of 6% debentures and £1 mill. of 5½% preference shares in return for taking up holdings in the operating company. Sales of National Benzole since the return to branded petrol on February 1 have been heavier than expected, and the directors are cautiously optimistic. The company has applied for a quotation on the London Stock Exchange for the debentures and preference shares.

WHESSOE

are pleased to announce that they have been appointed licensees of the

NORTH THAMES GAS BOARD

for the marketing and supply of their Works scale, catalytic

organic sulphur removal system

as established in their Harrow installation, for the reduction of the organic sulphur content of Town Gas to 10 grains/100 cu. ft. or less.

A substantial reduction of the organic sulphur content of Town Gas has long been recognised by the Industry as highly desirable, in order to reduce the maintenance costs of domestic appliances (and in particular, of water heaters), to extend the use of flue-less heaters with their high efficiency of utilization, and for the improvement of furnace atmospheres in certain industrial applications.

Whessoe will be glad to receive both tentative and firm enquiries from Undertakings who are interested in assessing the economics of this important development.

WHESSOE LIMITED

DARLINGTON AND LONDON

W44

A REVIEW OF THE IMPRESSIVE SILVER JUBILEE BUILDING EXHIBITION NOW AT OLYMPIA

NEW BUILDING and GAS

BRITAIN is in the middle of a building boom. All over the country builders are so busy that demand for essential building materials is outstripping supply. This creates an incentive for the progressive element to produce new materials and devise new methods—although the small builder in this country is one of our most conservative tradesmen—and there is a substantial and much-needed element of new thought to be found. Inevitably this tide of interest and business carries with it industries associated with building, the fuel services among them.

In this respect surely few can deny that it is the solid fuel industry, under the impetus of the Coal Utilisation Council, which is exercising the strongest influence both on the public and local authorities. We are living—whether we like it or not—in the age of the back-boiler, and it is somewhat fortuitous that the gas industry is in a position to 'cash in' on a considerable proportion of this business.

At the Building Exhibition, which opened at Olympia on November 18 and will remain open until December 2, it is the solid fuel appliance stands which exercise the greatest attraction—not electricity, nor even gas. And we make that statement after having made due allowance for the temptation of a glowing open fire and the weakness of human flesh on a chilly November day. However, that is an aspect of the exhibition to which we shall return in due course.

It is doubtful whether there is a better looking exhibition in our formidable list of such events. It is a specialist exhibition despite the fact that it covers an enormous field, ranging from gigantic mechanical handling plant to funny little gadgets for cutting glass. And it has the inestimable advantage that many, many exhibitors can utilise their own products in the construction of their stands which, far from being of a stereotyped design, appear in a vivid rash of individuality. It is, moreover, an exhibition which has a breath of health about it. It is usually well attended, and its opening is eagerly awaited by all ranks in the building profession. The fact that it is held every other year is greatly to its advantage, since it does not outwear its welcome, and within the two years a respectable number of new methods and products have appeared.

Historical Note

It is interesting to note that the Building Exhibition was first held at the Agricultural Hall, Islington, more than 70 years ago. In those days the title 'Building Exhibition' was purely nominal. Rifle-shooting galleries, coconut shies, hoop-la stands and confectionery stalls abounded, but serious exhibits reflecting the interests of the building industries were few and far between. The year 1895 saw a decisive change in the fortunes of the exhibition. In that year its organisation was undertaken by the Montgomery family, in whose hands it has remained ever since. Mr. Greville Montgomery and his brother, Mr. H. C. Montgomery, established the exhibition on a sound and businesslike basis. The collaboration of the Royal Institute of British Architects was obtained, while the trade itself responded by providing an exhibition of materials, tools and craftsmanship far superior to anything hitherto gathered under one roof. In 1895 there were 92 exhibitors. Ten years later the number had grown to 317, and the exhibition had outgrown the Islington Hall. In 1907 it moved to Olympia. Since that move the exhibition has expanded each time it has been held, until today it occupies every foot of available space in the three great halls of Olympia.

This year the exhibition celebrates its silver jubilee and, still under the Montgomery banner, is the biggest and almost certainly the best so far. More than 450 firms occupy the 600 stands erected on a floor space of nearly 350,000 sq. ft.—a complete survey of the industry which employs one in eight of the working population of this country.

Cook's Tour

Come with us now (as all the best travelogues say) on a very brief tour of the exhibition, and allow us to point out some of the exhibits likely to be of interest to the gas industry.

On stand O.283/4 **A.C.E. Machinery, Ltd.,** show an interesting range of tower mast hoists, winches and vibrators. The exhibits include a 15 cwt. capacity tower type platform hoist with waggon attachment and a new type 'Loadmaster' side runner hoist which incorporates specially designed tubular guides for quick assembly. A diesel-driven 'Comet' mobile platform hoist is representative of the range of petrol, diesel and electric hoits, with loading capacities up to 10 cwt. A number of winches are shown, and a range of the well-known "Humdinger' high frequency immersion type vibrators which afford 10,000-12,000 vibrations per minute from a geared head driven by a slow flexible drive shaft.

Adam & Harvey (Rapid Hammer), Ltd., on stand R.319, show how their rapid hammer shoots hardened steel bolts into concrete, brickwork or steel by means of a small cartridge, thus eliminating drilling, chiselling, plugging, etc. Two new models are introduced—Type R.5 for ¼ in. Whitworth bolts, and Type R.10 for ⅜ in. Whitworth bolts. The three main types of bolt are the nail type, the bolt with male thread for permanent screwed fixings, and the bolt with female thread for removable fixings.

Unquestionably one of the outstanding exhibits is that of **Allied Ironfounders, Ltd.,** on stand 636/7, which is a representation of the Stockton Test, designed to demonstrate the use which can be made of what have been described as 'the forgotten homes of Britain,' the millions of houses upwards of 70 years old, which could be improved immeasurably by installing modern sanitary and bathing facilities. The exhibit shows how four such houses were converted by Allied Ironfounders in Stockton-on-Tees. A complete replica of one of the houses has been constructed on the stand, showing 'before' and 'after' treatment.

First-class contemporary design of a type likely to appeal to the architect is a feature of the **Ascot Gas Water Heaters, Ltd.** (stand (N.272). Appliances shown include the 715 balanced flue multipoint, the 709 multipoint, the RS 52/1 boiling water heater, and the 503 range of single point and small multipoint water heaters. Particular stress is laid on the Ascot jig wall fitting. An attractive feature of the stand is the range of illustrations showing recent large housing schemes in which Ascot heaters have been fitted as standard.

Power tools for a variety of purposes are shown by **S. N. Bridges & Co., Ltd.,** on stand R.323. Among the uses to which these tools can be put are bolt fixing in concrete and steel, precision thread cutting for pipe work, and drilling in various materials.

Cellatite & British Uralite, Ltd., on stand L.245, show four major products: Cellactite, which is used for permanent, steel-cored, corrugated sheeting and radiators; Urastone, the well-known asbestos cement for flue pipes and fittings; Kimoloboard, a non-combustible panelling board; and Kimolo (Moler) insulating bricks and partition blocks.

Brilliant orange machines help to attract visitors' attention to stand H.171, which is occupied by the **Chaseside Engineering Co., Ltd.** On show for the first time in this country is the new 3½ cu. yd. 'Hi-Speed' dumper, which has a choice of four power units and a speed range from 3-20 m.p.h. The versatile light excavator is another exhibit on this excellent stand, which also sports a good sound/colour film showing Chaseside equipment at work.

Compressed Air Equipment

The **Consolidated Pneumatic Tool Co., Ltd.,** on stand K.215/6, give a good indication of the extent to which compressed air power can reduce building and other costs. One of the smaller models from the company's range of portable air compressors can be seen, and there are interesting examples of percussive drills and an impressive pneumatic impact wrench. Demolition tools are featured, including three types of concrete breaker.

Heating and ventilating equipment suitable for operation on steam, low temperature hot water, and high temperature hot water, is shown on the stand of **Copperad, Ltd.** (F.124). Unit heaters, fan convectors, radiant heating panels, fan coolers and grilles make an interesting exhibit.

Durasteel, Ltd., show a variety of steel and asbestos materials, including fire protection panelling (a light ample steel-framed fireproof partition clad with Durasteel 3DF2 sheets forms one side of the stand), fireproof doors, and roofing. This is stand Q.316.

Easiclene Porcelain Enamel (1938), Ltd., on stand H.177, include among the many products shown their well-known refrigerators. Both models are on view, the 4½ cu.ft. capacity and the 2 cu.ft. capacity, the latter with a working top height of 36 in., the working top itself being of porcelain-enamelled steel.

A really first-class stand is that of **Fibreglass, Ltd.** (L.241), which expertly

shows the Company's thermal insulating materials. These materials are bitumen-bonded and made up in rolls in the form of a quilt. The latter, which is composed of Fibreglass wool encased in Ibeco (Kraft) paper, is used as a sound-deadening material. A replica of a loft shows how Fibreglass wool can be laid between the joists in roof spaces, and other products for pipe and boiler insulation are on view.

The **Expanded Metal Co., Ltd.**, on stand E.95, shows how their many products can be utilised by the building industry. To the gas industry their products are perhaps best known in the form of 'Expamet' walkways for use on works, but this exhibit reveals how much wider is their range of expanded metal materials.

Heating appliances get first place on stand N.266, on which **Sidney Flavel & Co., Ltd.**, display their products. For once the well-known '68' cooker takes a back seat in favour of solid fuel-burning fires. Those on view are the 'Newbold,' with finned back boiler, the 'Metro' boiler single and double case units, and the 'Newbold,' 'Seymour,' and 'Metro Mk. II' solid fuel continuous burning fires. Visiting gas men will also be quick to note the Flavel gas-heated drying cabinet.

Gas Council Exhibit

Models and plans of new housing estates are a feature of the **Gas Council** stand (P.300) which is designed to appeal to architect and builder alike. In appearance the stand leaves nothing to be desired, although one could wish that its position was a little more favourable. Estates featured include Liverpool's Kirkby Estate, Plymouth's Whitleigh Estate, Derby's Leyland's Estate, and in addition there are the new towns of Harlow and East Kilbride. The types of appliance fitted in these various large installations are shown with each section. New appliances on show include the 'Auto Ace' coke boiler of Smith & Wellstood, Ltd., and the drying cabinet of Clifford Products, Ltd.

A comprehensive selection from the Company's range of automatic self-priming centrifugal pumps is exhibited by **Goodenough Contractors' Machinery, Ltd.**, on stand R.321/2. This selection includes the latest addition to the range—the 8-in.—model 812 which is shown with bare shaft extension for coupling to petrol or diesel engine, or electric motor. The rated output is 125,000 gal. per hour and it can be supplied as a mobile unit, coupled to engine, and mounted on a towing trailer. Other new models are the 2-in. model 260 and 3-in. model 103.

The gigantic word 'Harvey' beckoned us to the stand of **G. A. Harvey & Co. (London), Ltd.**, which displayed many of the firm's wirework and perforated metal products and gilled tubes. New products include a manhole and cover fitting for their hot tanks, a design which has the advantage of preventing the thread of the bolts from coming into contact with water and the consequent risk of shearing the heads of the bolts.

Hickson's Timber Impregnation Co. (G.B.), Ltd., have an impressive double-decker stand on which they are showing their excellent colour talkie, 'Timber for Tomorrow.' The lower part of the stand is used as a reception area and display space, where particular stress is laid on 'Tanalith' preservative in joinery.

Snugly ensconced near a buffet we found the **Hilmor, Ltd.**, stand (B.23) with its fine display of maroon-painted tube bending machinery. This included bench fixture and lightweight portable models for the plumber and gas fitter, hand operated, general purpose benders and portable rotary hydraulic machines for bending gas and steam conduit and light gauge copper tube. The hand-operated and motorised mandrel machines developed by Hilmor are demonstrated daily.

Ideal Boilers & Radiators, Ltd., present on stand Q.310 a magnificent display of the Company's products. In addition to sanitary ware, there is a selection from the range of boilers for central heating and indirect hot water supply and the thermostatically controlled 'Autocrat' domestic boiler. Ideal gas boilers are represented by the Nos. DG and I-GBB series.

Lafarge Aluminous Cement Co., Ltd., makers of 'Ciment Fondu,' exhibit the properties of their product on stand D.78. When mixed with a refractory aggregate such as crushed firebrick, 'Ciment Fondu' forms a mixture known as 'refractory concrete' because of its marked refractory properties.

Pipe Bending Machinery

Lawler, Ayers & Co., Ltd., show a complete range of 'Laco' precision pipe-bending machinery on stand O.279 (the Company has another stand, 430, in the Grand Hall Gallery). A hydraulic bender of great power for the rapid bending of steam pipe up to 3 in. diameter is demonstrated, as well as the full range of alternative machines.

An interesting travelling exhibit comprising quarter full size scale models of the main uses of lead sheet and pipe in building work, which will be available on loan to technical schools after the exhibition, is on view on stand H.189, where the **Lead Industries Development Council** hold sway.

The **Leeds Fireclay Co., Ltd.**, on stand K.227/8, have an interesting stand partly constructed from their own fireclay products. In addition to partition blocks, sanitary ware, etc., the Company's refractory cement known as 'Firetite' is featured.

A comprehensive display of photographs and models shows the latest developments in the range of cranes manufactured by **R. H. Neal & Co., Ltd.**, and its subsidiary, **Lorry Loaders, Ltd.**, on stand Y.387/8. The latter show an interesting hydraulic crane. The Neal lorry loader with a capacity up to 1½ tons is fully demonstrated. A single lever controls all movements and features include power slewing through 180°, the telescopic jib providing for varying outreach.

The formidable words, 'Pumps, Rammers, Rippers' attract specialists in demolition to the stand of **Pegson, Ltd.** (C.59). Fixed and portable centrifugal pumps and diaphragm pumps are on show, together with the firm's latest model petrol-operated concrete breaker and an entirely new power rammer.

The Solid Fuel Division of **Radiation Group Sales, Ltd.**, on stand M.264 is one of the most attractive at Olympia. Appliances featured include the new 'Parkray' free-standing convector fire, the 'Yorkseal' openable fire cooker, the 'Yorkist' No. 12 combination grate, and the new Mark III version of the 'Chevin' convector fire. A glass-sided demonstration model of the Radiation whole-house warming solid fuel system is on view.

The **Rawlplug Co., Ltd.**, specialists in fixing anything to anything, show, on stand L.242, various screw fittings, bolt fixings, cavity fixings, Rawltools, drill hammers, and such products as Rawloops, Rawlties, and Rawlhangers.

Remington Rand, Ltd., on stand 438 in the Grand Hall, Gallery, show their wide range of office machines, systems and equipment. Of special interest is 'Dy-flex,' the latest development in office photo-copying. This compact unit produces perfect duplicates of any document up to the size of 18 in. by 14 in.

Stewarts & Lloyds, Ltd. (stand R.324) show black and galvanised screwed and socketed steel tubes, joint protection, tubular fittings, a selection of joints for gas, water, and steam, etc. **Tubewrights, Ltd.**, the S. & L. subsidiary specialising in the design and manufacture of welding tubular steel structures, also have an impressive exhibit.

Stothert & Pitt, Ltd., on stand O.288/9, show concrete mixers of various types and some interesting vibrating rollers of the hand propelled, power propelled, hand guided tandem and trailer types, including the latest design, i.e., a hand propelled trench vibrating roller having a 13-in. wide roll.

Robert Taylor & Co. (Ironfounders), Ltd., makers of the well-known 'Tayco' domestic boilers, show their range on stand O.286. An outstanding exhibit is the completely new Tayco-ette cooker and boiler.

Up in the Grand Hall Gallery, on stand 466, was found the impressive tube bending equipment of **Tubela Engineering Co., Ltd.** The Company designs and manufactures machines for bending steam and gas tubing, light gauge solid drawn brass tubing, aluminium tubing, etc. Pipe vices and stands are also shown on the stand.

Asbestos Products

Turner's Asbestos Cement Co., Ltd., use their own asbestos products for practical purposes on stand B.28/9. Their products include 'Everite' asbestos-cement corrugated sheeting and panel sheets, and 'Turnall' cavity decking.

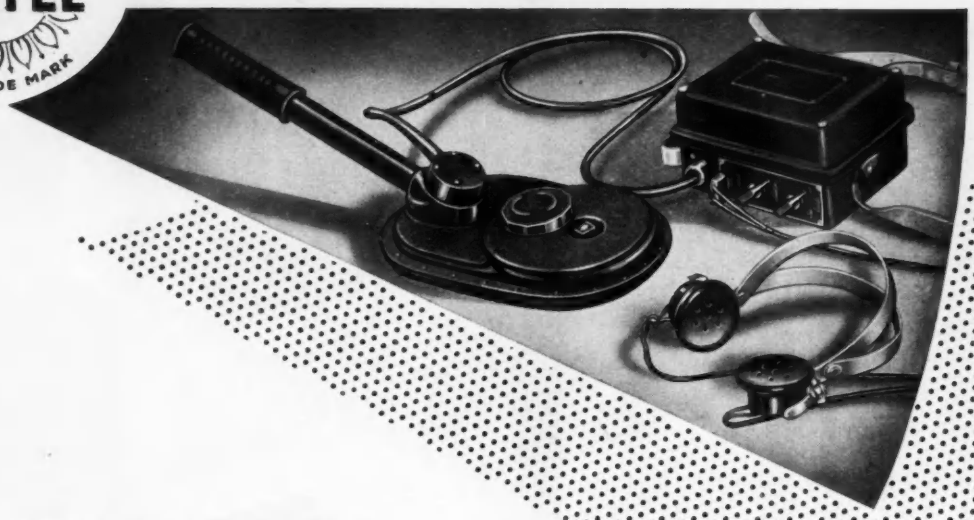
Thos. W. Ward, Ltd., show, on stand H.170, an 'Eldair Cub' portable shearing machine, a 'Kellam' hydraulic cross-cut saw, a Fowler MK VF tractor with hydraulic dozer blade, a Conder 3 cu.yd. hydraulic scraper, and wood-turning equipment.

The Warsop S.7 self-contained concrete breaker attracts a good measure of attention on stand K.219. **Warsop Power Tools, Ltd.**, show this well-tried machine in addition to their new H.D. rock drill, the 'Benjo' rammer, and 1¼-in., 2-in., and 3-in. petrol and 4-in. diesel centrifugal pumps.

F. E. Weatherill, Ltd., on stand G.162, show their hydraulic loading shovel which, because it is under 7 ft. high, can work in the lowest of sheds and yet can discharge into vehicles or hoppers 11 ft. high. Its hydraulic system is actuated by a pump driven direct from the crankshaft. Three sizes of scoop are available—¾ cu. yd., 1 cu. yd., and 1¼ cu. yd.

The Yorkshire Copper Works, Ltd., have a stand which is easily spotted by the revolving fitment on the top, and the fact that the stand (G.146) is partially panelled by copper tubes. A large diagram shows the primary and secondary circulating system from a gas-fired summer boiler and solid fuel-fired winter boiler. Excellent coloured photos complete an impressive display of the firm's many copper products.

CINTEL
REGD. TRADE MARK



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positions of which are unknown. And with the aid of
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This instrument is used today by most of the principal gas
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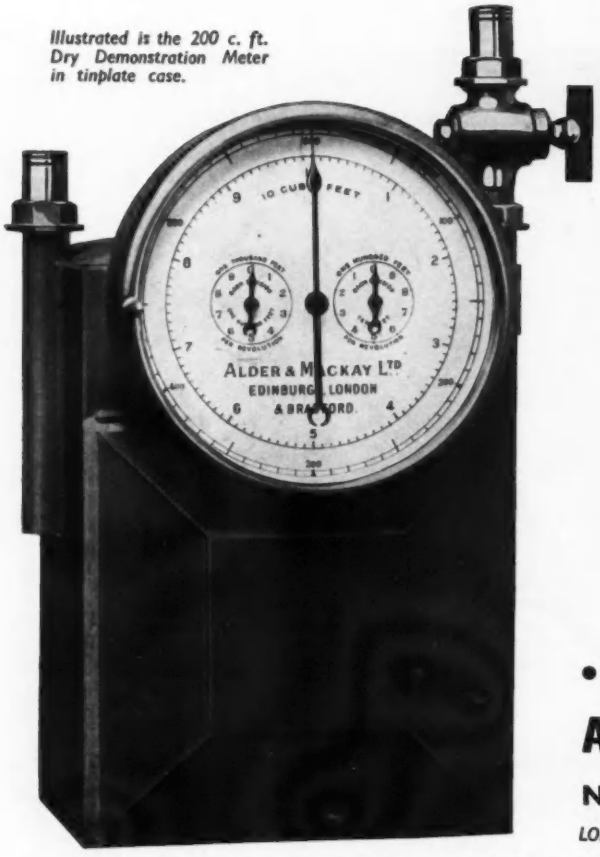

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The 'A & M' DRY DEMONSTRATION METER

This meter is particularly useful for cookery or other demonstration purposes. The dial is 9" in diameter, and the meter is available in a variety of sizes. Complete details will be sent on request.

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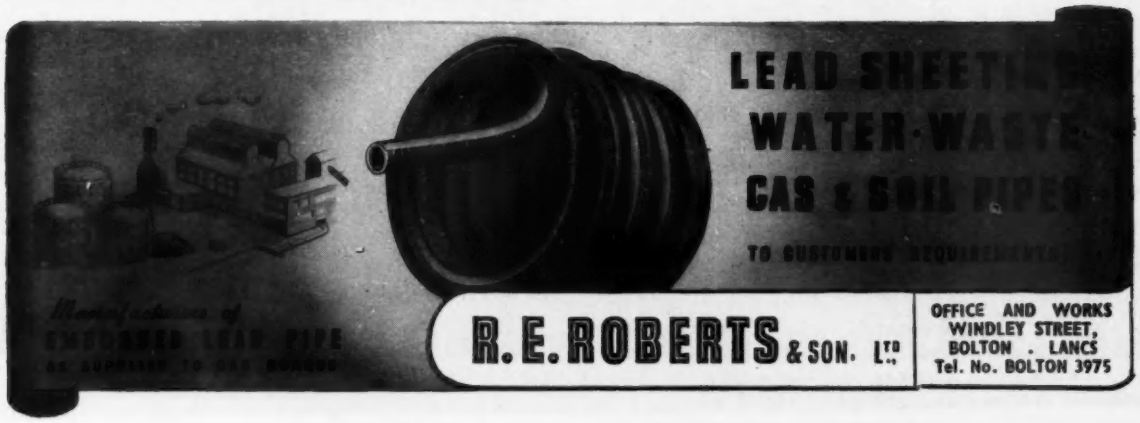

PUBLISHERS' NOTICE

The " Gas Journal " is published every Wednesday, price 1/3d.; by post 1/5d.

Subscription Rates: Home and Empire:—52/- per annum; Foreign:—60/- per annum. (Both payable in advance.) A copy of the " Gas Journal " Calendar & Directory is presented each year to continuous subscribers.

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BUSINESS MANAGER : S. T. CULLEN

MIDLANDS OFFICE: 10, Union Street, Birmingham.

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APPOINTMENTS VACANT

The engagement of persons answering these advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order, 1952.

W. C. HOLMES & COMPANY LTD. have vacancies on their staff as follows :

1. Chemical Engineers, holding a degree in Chemistry, Gas or Chemical Engineering, preferably with some experience in research work on laboratory or pilot plant scale.
2. An Analytical Chemist, preferably holding a degree in Chemistry, and with some experience in modern methods of chemical analysis.
3. Technical Assistants, having at least two years experience in the testing, control or operation of gasworks or chemical plant. Chemical or gas engineering qualifications an advantage.

Posts 1 and 3 above may involve some travelling, but most of the work will be done at the new Research Laboratories at Cleckheaton.

Candidates should have completed their National Service Training.

Application for the posts should be made to J. J. Priestley, W. C. Holmes & Co., Ltd., Research & Development Department, Whitechapel Road, Cleckheaton, Yorks.

NORTH WESTERN GAS BOARD

NORTH CHESHIRE GROUP

GROUP ELECTRICAL SUPERINTENDENT

APPLICATIONS are invited for the above pensionable appointment at a salary within Grade A.P.T. X (£665-£765 per annum).

Applicants should preferably be Corporate Members of the Institution of Electrical Engineers, or have passed Section A and B or be exempt therefrom.

Applicants should have experience in the operation and maintenance of 1,200 kW alternators, 6.6 kV, 3.3 kV and 440 V distribution systems, electric motors and starters up to 500 h.p. at 3.3 kV, and the organisation of routine electrical maintenance.

Detailed applications, giving the names of two referees, should reach the General Manager, North Western Gas Board (North Cheshire Group), Great Portwood Street, Stockport, within fourteen days.

NORTH WESTERN GAS BOARD

COKE TECHNICAL OFFICER

EXPERIENCED Fuel Technologist required to undertake the duties of COKE TECHNICAL OFFICER and to be responsible for advising on all technical aspects of coke development.

The successful applicant will be required to operate from the Headquarters of the Board in Manchester.

The position is pensionable and the salary will be commensurate with qualifications and experience but will not be less than £1,250 per annum.

Applications in writing with the names of two referees must be sent to the Secretary of the Board, Bridgewater House, 60, Whitworth Street, Manchester, 1, by December 14, 1953.

SOUTHERN GAS BOARD

NORTHERN DIVISION
OXFORD & DISTRICT GAS UNDERTAKING
CONSTRUCTIONAL ENGINEER

APPLICATIONS are invited from qualified engineers for the position of CONSTRUCTIONAL ENGINEER at a salary of £900 per annum, rising to £1,000 per annum by two increments.

Candidates should have had a sound engineering training and considerable experience in the design and construction of gas works plant and buildings. Membership of one of the engineering institutions will be an advantage.

The successful applicant will be required to pass a medical examination and to contribute to the Southern Gas Board Staff Pension Scheme, subject to the preservation of any existing pension rights in the gas industry.

A house will be provided, if required, at a reasonable rent.

Applications should give details of age, training, qualifications, experience, present position and salary and the names of two referees.

The closing date for the receipt of applications will be December 10, 1953.

S. C. BENTLEY,
Engineer & General Manager.

Therm House,
St. Aldate's,
Oxford.
November 19, 1953.

SOUTHERN GAS BOARD

NORTHERN DIVISION
OXFORD AND DISTRICT GAS UNDERTAKING
ACCOUNTANCY ASSISTANT

APPLICATIONS are invited for the post of ACCOUNTANCY ASSISTANT at a salary within Grade A.P.T. X, Provincial 'A', of the National Salary Scales (£665-£765 per annum).

Applicants should possess a recognised accountancy qualification, have a sound knowledge of modern practice, preferably including machines, and be capable of working to final accounts stage without supervision.

The person appointed will be required to pass a medical examination and to contribute to the Board's Staff Pension Scheme, subject to the preservation of any existing pension rights in the gas industry.

Applications giving age, education, qualifications, experience, present position and salary, and the names of two referees should reach the undersigned not later than December 1, 1953.

S. C. BENTLEY,
Engineer & General Manager.

Therm House,
St. Aldate's,
Oxford.
November 14, 1953.

(*Classified Advertisements continued on page* 554)

APPOINTMENTS VACANT (ctd.)

GRADUATE in Chemistry, Chemical Engineering, or Physics, required for development work on Gas Appliances.

Interest in, or experience of production engineering problems, an advantage. Post is a progressive one, with good prospects. Applicants should write, giving full details of experience, qualifications, age, and salary required, to Assistant General Manager, Messrs. R. & A. Main, Limited, Gothic Works, Falkirk.

WEST MIDLANDS GAS BOARD

WARWICKSHIRE DIVISION—
COVENTRY DISTRICT
SENIOR CONSTRUCTIONAL
ENGINEERING DRAUGHTSMAN

CANDIDATES should be experienced in engineering draughtsmanship, the design and layout of Gas Works, the erection of plant and buildings and in the preparation of estimates, specifications and builders' quantities. They should possess a National Certificate in Mechanical Engineering.

The salary for the post will be within Grade X (£665-£765) of the National Salary Scales for Gas Staffs.

The post is pensionable and the successful candidate may be required to pass a medical examination.

Applications stating age, personal details, qualifications, experience, and the names of two referees, should be addressed to Mr. A. Allen, Divisional General Manager, West Midlands Gas Board, Warwickshire Division, Gas Street, Coventry, to reach him within fifteen days of the appearance of this advertisement.

F. H. CURETON,
Secretary to the Board.

SCOTTISH GAS BOARD

SOUTH EAST DIVISION
DENNY DISTRICT
APPOINTMENT OF DISTRICT MANAGER

APPLICATIONS are invited for the above post. Candidates must be Corporate Members of the Institution of Gas Engineers, possess sound administrative experience and have a comprehensive knowledge of the process of gas manufacture in vertical retorts, and of distribution.

Salary will be Provincial Grade BXI (£675-£800), initial placing according to qualifications and experience. A house, free of rent and rates, with free fuel and light, will be provided.

The successful candidate may be required to pass a medical examination and shall subscribe to the Board's Pension Scheme.

Applications addressed to the undersigned should reach the address given not later than Monday, November 30, 1953.

D. J. COLVIN,
Divisional Controller.

25, Chester Street,
Edinburgh, 3.

GUERNSEY GAS LIGHT COMPANY LTD.

APPLICATIONS are invited for the position of ASSISTANT ENGINEER AND MANAGER to the above Company.

Candidates should have a comprehensive knowledge of gas manufacture and distribution, with some administrative experience.

Applicants should furnish details of training, experience and qualifications and should state the salary required. *Copies* of three Testimonials should be enclosed.

Envelopes to be marked 'Confidential' and addressed to the undersigned, should arrive not later than December 15, 1953.

S. G. VANE,
Engineer & Manager.

16, Smith Street,
Guernsey.

EXPERIENCED SALES REPRESENTATIVE wanted, having contacts with Gas Undertakings, for sale of Gas Cookers, etc. Apply: R. Russell & Sons, Ltd., Peel Foundry, Derby.

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age over 30, required for large constructional engineering company in the Midlands. Wide gas holder and plate-work experience essential. Good opening for right man. Pension scheme.

Write, in confidence, stating age, experience, qualifications and salary required to: Personnel Manager, Box 397, 19/21, Corporation Street, Birmingham, 2.

NORTH EASTERN GAS BOARD

YORK-HARROGATE GROUP
TECHNICAL ASSISTANT—
SCARBOROUGH WORKS

APPLICATIONS are invited for the above appointment within Grade A.P.T. VII, Provincial 'A', £545-£625 per annum of the scales of the National Joint Council for Gas Staffs. The appointment is subject to a satisfactory medical examination and participation in the Board's Superannuation Scheme.

Applicants should hold the Higher Grade Certificate in Gas Engineering (Manufacture) of the Institution of Gas Engineers, and have experience in the control of Works Plant and Labour. Experience with Intermittent Vertical Chamber Ovens and C.W.G. Plants will be an added qualification.

Applications, stating age, experience, training and qualifications should be forwarded to the Group General Manager, North Eastern Gas Board, York-Harrogate Group, 48, James Street, Harrogate, to reach him within ten days after the appearance of this advertisement.

J. C. GARDNER,
Secretary.

Bridge Street,
Leeds, 2.
November 17, 1953.

NORTHERN GAS BOARD

SUNDERLAND DIVISION
ASST. DISTRIBUTION SUPERINTENDENT

APPLICANTS must have knowledge of all aspects of modern distribution practice, general administration of a Distribution Department and practical experience of main and service laying, both high and low pressure, gasfitting, public lighting, and the control of employees.

The possession of the Institution of Gas Engineers Higher Grade Certificate in Gas Engineering (Supply) would be advantageous.

The commencing salary will be within A.P.T. Grade X (£665-£765) of the National Salary Scales for Gas Staffs.

The successful candidate will be required to pass a medical examination and be subject to the provisions of the Board's Staff Superannuation Scheme.

Applications, stating age, education, training, qualifications and experience, together with the names of two referees should be received by the undersigned not later than December 1, 1953.

W. O. KIRKWOOD,
Divisional General Manager.

Fawcett Street,
Sunderland.
November 16, 1953.

EASTERN GAS BOARD

SUDBURY DISTRICT

FIRST CLASS District Gas Fitter urgently required. Full J.I.C. rates of pay (Provincial 'B') and conditions of service.

The successful candidate will be required to pass a medical examination.

Applications, stating age and giving full details of qualifications and experience should be forwarded without delay and addressed to: The Group Manager, Eastern Gas Board, Ipswich Division, Gas Works, Bury St. Edmunds.

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PUBLICATIONS

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'Phone: Northern 0989. 'Grams: Reckoners, B'ham.

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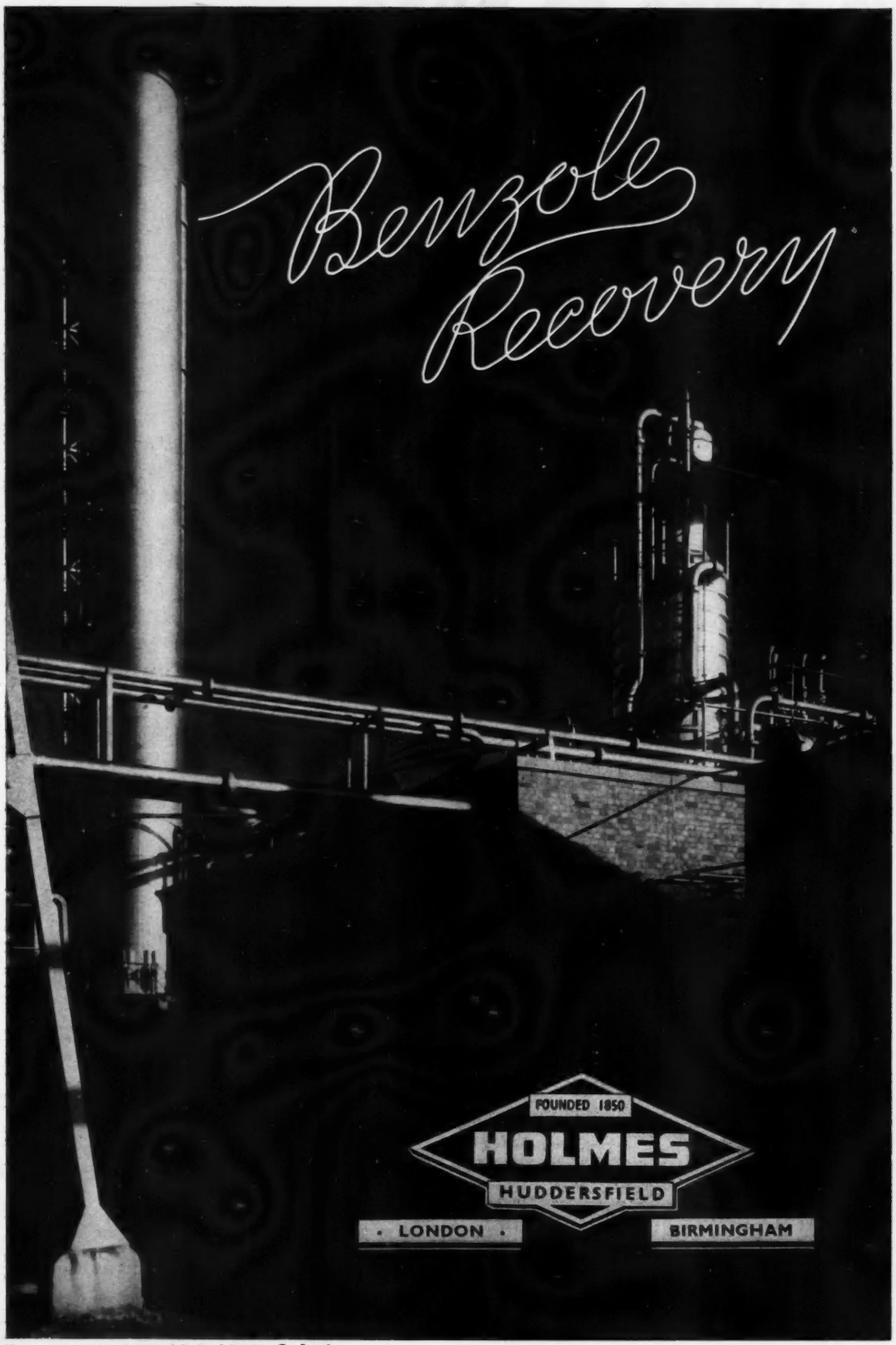
Truck Loads to our own private siding, Beddington Lane, Southern Region.



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C267

we serve to burn

"Fishtail" type burner *with two-armed stamped pattern injector for heating liquid in tanks by submerged horizontal combustion tubes. For use with low pressure gas supplies.*
Size Range: *1", 1¼", 1½", 2" and 2½" outlets.*
Capacity Range: *45-280 cu. ft. of gas per hour.*

Note.—These four burner heads are for high pressure gas or low pressure gas and air blast.

Brass non-blow-off head types: *deal with 5 to 10 cu. ft. of gas per hour.*

Stainless steel, "F" type head, burner: *deals with 8 cu. ft. of gas per hour.*

Perforated head type burner: *deals with 10 or 15 cu. ft. of gas per hour.*

Type 2 Mixture Controller, *for controlling quality of air/gas mixture irrespective of varying pressures and resistances. Temperature control is varied by manipulation of the air cock only.*
Capacity Range: *from 130 to 1380 cu. ft. of gas per hour according to air pressure (½ lb. to 1 lb.) and size. For low pressure gas systems.*
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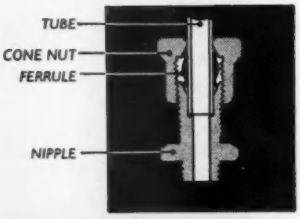

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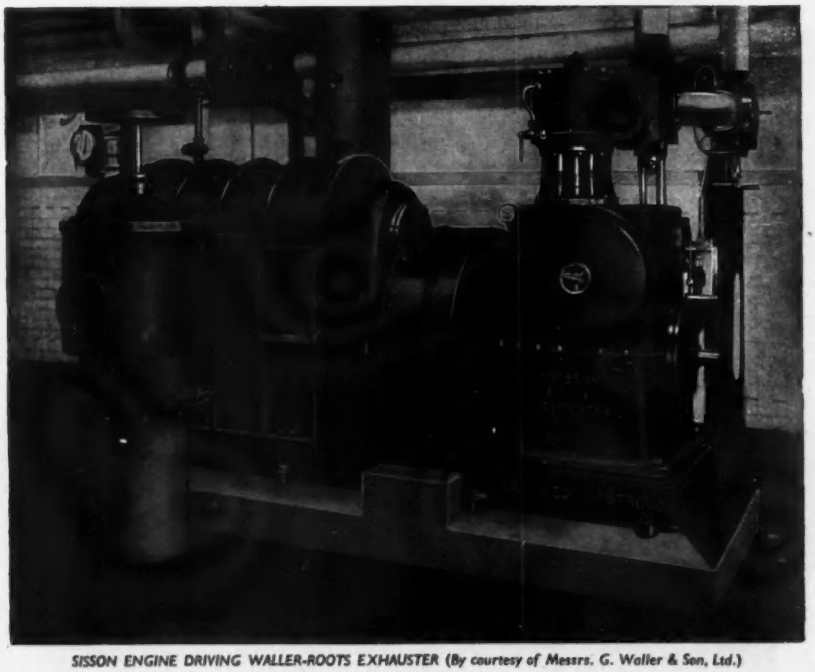

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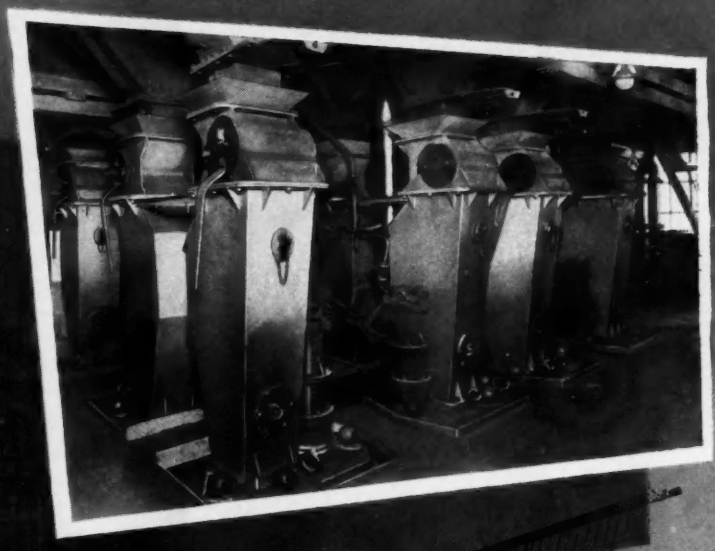
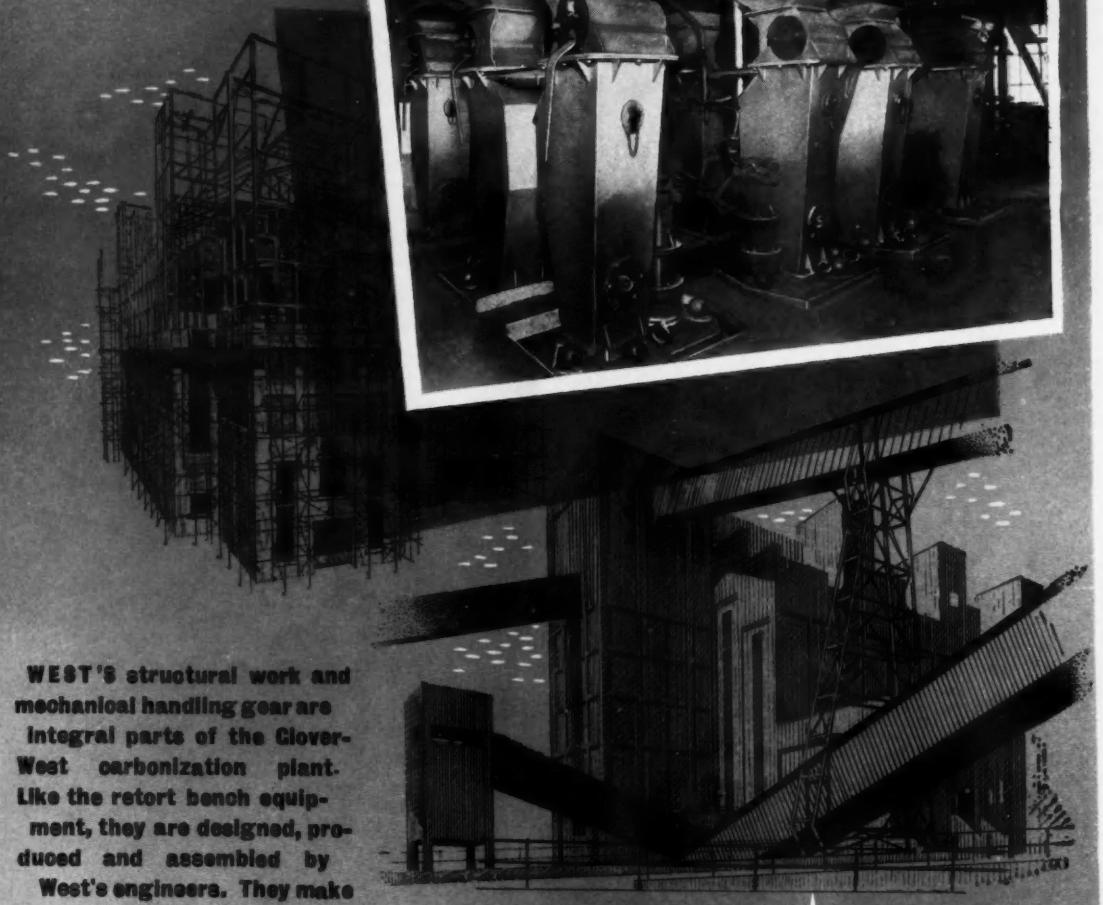
Behind the Retorts





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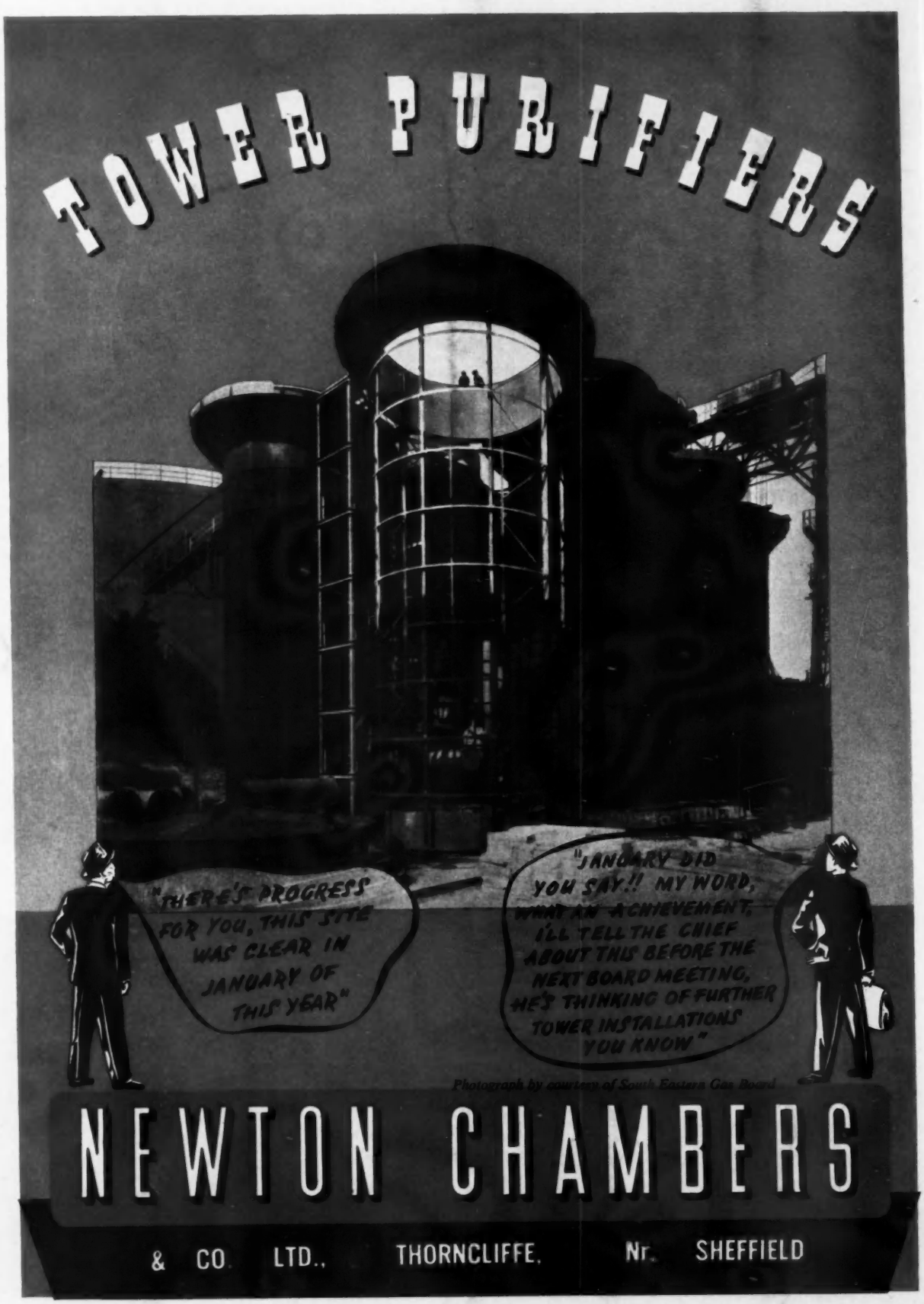
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